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J. Howell Way M.

TRANSACTIONS

—OF THE—

MEDICAL SOCIETY

OF THE STATE OF

WAYNESVILLE

NORTH CAROLINA.

THIRTY-EIGHTH ANNUAL SESSION,

—HELD AT—

ASHEVILLE, N. C.

May 26th, 27th and 28th, 1891.

WILMINGTON, N. C.,
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MINUTES

—OF THE—

THIRTY-EIGHTH ANNUAL SESSION

——OF THE——

Medical Society of North Carolina.

Asheville, N. C., May 26, 1891.

First Day—Morning Session.

The 38th annual meeting of the Medical Society of the State of North Carolina was called to order at 10 o'clock a. m. by Dr. M. H. Fletcher, Chairman of the Committee of Arrangements.

The meeting was opened by a fervent prayer from the Rev. Charles W. Byrd, of the Central Methodist Episcopal church.

The Chairman then introduced the Hon. Richmond Pearson, who delivered the

Address of Welcome.

On behalf of the citizens of Asheville I not only extend a hearty welcome to your distinguished body, but I beg to express our grateful appreciation of what the medical profession has done for our city.

I recall distinctly and with pleasure your meeting here just ten years ago. Asheville was then a scattered and straggling village. Yours was the first great convention of eminent and influential men to assemble here, and you were the first to recognize and proclaim the advantages and charms of this favored region.

Your eminent men have sent the name of Asheville into the

uttermost parts of the world. Such men as Dr. Loomis, Dr. Mitchell, Dr. Agnew and Dr. Sayre, have sent hundreds of patients with thousands of ailments and millions of money down here, to such men as Hilliard, and Battle, and Williams and others, and these doctors have relieved these millionaires both of their ailments and of their millions, and then have modestly ascribed it all to our climate, and set their enthusiastic and impoverished patients to work building up the town, building hotels, factories, handsome houses, buying town lots and loaning money at 6 per cent. to the great joy and surprise of the natives.

Thus in a certain sense the doctors have made Asheville and Asheville has made the doctors, and I stand here to-day to acknowledge our part of the obligation. All mankind must admit an everlasting debt to your great and learned and beneficent calling. We recognize the physician, the family physician, of course; he is the first to meet and the last to leave us in this world, he presides and prescribes both at the birth and at the death; he always welcomes the coming guest in an obstetrical sense, and in some cases I fear he speeds the parting guest in a mortuary sense; seriously, we recognize in the family physician the most intimate friend, the most trusted counsellor, the faithful custodian of the innermost secrets of the heart and of the household.

In a special and peculiar sense we welcome you to the city which you have raised from the position of a hamlet; we welcome you to the climate whose reputation you have made world-wide; we welcome you to scenery whose verdure and whose azure, whose serrated peaks and broken skylines must touch the sensibilities of the dullest man.

We would welcome you, gentlemen, to citizenship here. There is room for all, and welcome for all, and work for all, and profit for all. We would even admit you to the charms of our select real estate transactions, to a fair share in our hopes and expectations, to our new streets and pavements soon to be laid, and if not laid in gold or jasper, or opulent alabaster, we have resolved shall not be surpassed this side of the New Jerusalem.

We welcome you to our skyland and skylines, to our mountain walks and our monntain dew, to our story-telling glens and our spring blossoms, to our wild flowers and our invalids.

Gentlemen, I assure you we are glad to see you.

Dr. Picot's Response.

Mr. Pearson's remarks were heartily applauded, and at their conclusion Dr. J. Picöt, of Littleton, N. C., responded on behalf of the Society.

Dr. Picöt said :

I thank you in the name of my confréres for your kind and generous welcome. I am glad to say that many of us are not entire strangers in your midst. Ten fleeting years have only passed since as a body we met in your city before. We carried away with us then the most pleasant recollections of your kind, hospitable people. We come now with glad anticipations to renew them. We find some of the same familiar scenes that greeted us then. Yonder still flows your lovely river, well and truly named a "Nymph of Beauty," itself immortalized in song, now murmuring songs of poetry upon its crystal bosom, and bathing with its pure water the feet of these eternal hills. On every hand still tower your lordly mountain peaks, but in all else how changed ! Surely some eastern necromancer has been here and touched your homes with his magic wand. We left here a pleasant little village nestled in this valley, but find now a rich and prosperous city, bustling with all the signs of great wealth and prosperity. We already recognize yours as the queen city of North Carolina, and let us predict with confident hope that ere another decade has passed yours will be the queen city of our beloved southland, and that it will be to North Carolina what Athens was to Greece—the nursing mother of brave men and gifted women.

Your region was once landlocked and almost entirely unknown but now the story of your delightful clime has been carried to every part of this and many a distant land. It has brought hither a floodtide of wealth and population. We bid you God-speed in your glorious era of progress.

My venerable teacher, the late Prof. Samuel Henry Dickson, once said to his pupils, when speaking to us of that direst of all human ills, pulmonary consumption : "Send your patients, gentlemen, to the mountains of Western North Carolina, for if there is a paradise on earth, it is there." Now, I can believe it, for these mountains, piercing the heavens themselves, seem to lift one nearer to the throne of the Great I Am, and that they are really His stepping

stones. They are grander and more awe-inspiring to us who are dwellers of the plains and by the shores of old ocean. They are fitting abodes for poets, for painters and necromancers. I have listened to the sobs and moans of the sea, have seen its waters yeasted into white foam, and tempest-tossed by the wild winds' play. I have seen it as placid as the smile on the lips of beauty. It is always sublime in calm or in storm, but for scenes of ever-shifting beauty and enchanting delight, your mountains are a joy forever. We would delight to wander over their lordly peaks, through their shady dales, peer into secret dells and hidden rivulets, that seem to us tenanted with naiads and graces.

We accept your kind hospitality in the same spirit in which it is intended, and promise you to enjoy it to our utmost during our short stay in your city.

The Society was then called to order for business by the President, Dr. Richard H. Lewis, of Raleigh.

The attention of the Society was asked to the roll-call.

[The names of those responding will appear at the close of the minutes.]

The President read invitations from Doctor and Mrs. Karl von Rück to a reception this evening; from the Buncombe County Medical Society to an excursion to Hot Springs and a banquet to be given at that place on Thursday afternoon and evening; also one to the privileges of the various clubs in the city.

Dr. Bahnson invited the Society to dine at the State Hospital in Morganton on Friday. He added that the State Hospital is an Institution of which not only every physician, but every citizen may be proud.

Dr. Richard H. Lewis then delivered the President's Address.

It was moved and carried that a committee of three be appointed to take into consideration the salient points in the Address and report to the Society.

The Chair appointed the following

Committee on Credentials.

Drs. M. H. Flether, G. H. Moran, D. T. Tayloe.

Committe on Finance.

Drs. W. T. Cheatham, S. W. Stevenson, J. W. McNeil.

Dr. J. W. McNeil moved that the resolution for changing the manner of election of officers be made the special order for the afternoon session.

Dr. Thomas F. Wood thought it would probably facilitate the action of the Society to await to hear the report of the Committee on the President's Address, and offered this as a substitute.

The substitute was adopted.

The Chair appointed the following

Committee on President's Address.

Drs. W. P. Beall, J. Howell Way, Frank Brown.

The President said it was on the programme for him to appoint the Board of Censors. He did not consider that this appointment belonged to him, and said the present Board would hold over till their successors were elected by the proper authority.

The Secretary had only arranged the programme according to the custom the past two or three years.

The report of the Treasurer was called for.

The Secretary read a letter from Dr. J. M. Lawing, Lincolnton, stating his inability from disease to perform the duties of a member of the Society, and asking to withdraw.

Dr. J. M. Lawing made an Honorary Fellow.

Dr. Thomas F. Wood moved that Dr. Lawing be made an Honorary Fellow, which was seconded by Dr. J. A. Reagan, and then adopted.

A letter from Dr. C. H. Lewis expressing his inability to be present, and asking to be relieved from paying his dues for 1891.

The President considered that this letter required no action by the Society, if the suggestion in his Address be adopted, as Dr. Lewis would only suffer in receiving no copy of the Transtactions this year.

A letter and a resolution from Dr. McGuire, through Dr. Satchwell, were read, and the resolution was adopted.

A letter was read from Dr. Eugene Grissom, Denver, Col., asking to have a statement of his arrears in dues sent to him unless he came under the twenty-five year's clause.

The Chair thought no action of the Society necessary.

An invitation was read from the Mississippi Valley Medical Association, for which courtesy the President expressed the thanks of the Society.

The Chair stated that no committee on Pittman Prize had been appointed because even such a prize had not excited the zeal of any member to the point of presenting an essay.

Dr. Crowell Invited to the Courtesies of the Society.

Dr. J. W. Long stated that Dr. Crowell, President of Trinity College, was present, and asked that the floor be given him to say a few words in regard to that part of the President's Address relating to the Medical Department of Trinity College.* The privileges of the floor were extended to Dr. Crowell, who said, after thanking the Society for the privilege of speaking on this subject, that he felt the Institution he represented was misrepresented in the President's Address. He however excused the President for any intentional misrepresentation. He did not see why the effort any institution of the standing of Trinity College to elevate the standard of all classes of education and its services to the public, should be brought before this body on a hypothetical basis when the facts might have been learned by a letter to him, for he made it a rule to answer all letters sent to him. He thought it would have been more satisfactory if the matter had been inquired into. This was a newspaper report, and he hadn't time to correct all newspaper errors. He wished to give a true statement of the facts. In view of the fact that he has to keep pace with all scientific learning, and thinking that the medical profession of North Carolina was not satisfied with the present grade of medical education, he invited a number of physicians to meet him with any other physicians they might invite, and talk over some method of improving medical education in the State. It was the opinion of the gentlemen to whom he spoke that it should be improved. He met these physicians and conferred with them for half a day. They differed in their views, but all agreed that something should be done. The meeting was private and nothing given to the papers, but reporters made up a report and gave to the public. He could not indorse the

*In reply to the President's Address bearing upon the subject. The Address will appear next month.

newspaper report. He claimed that no man in the Society believed in a Board of Examiners more than he. He thought it unfair for the Society to put the matter in the light it had. Furthermore, nothing was done. It has been the opinion of those with whom I have spoken that much could be done to improve the state of medical education, and he believed that the State profession would encourage every effort to that end. He was sure if there were a medical college of ample endowment to put the best men its chairs, it would do much to raise the standard of education in the profession. It is not enough for an Institution to be running only to meet expenses. He desired to bring to the Institution he represented anything that could contribute to its efficiency in advancing learning. The Society need have no fear if they could get so much means at their command as to establish this new school. He is here to learn what the medical profession desires. He excuses any physicians for their misunderstanding, but his Institution would never be misrepresented without his having something to say.

President Lewis disclaimed any intention of misrepresenting the college or any other college or any other man. One of the reports was in one of the leading medical journals of the country, and the newspaper reports showed so much understanding of the laws regarding practice and of medical education, he could not think a layman had written it. Living at Raleigh, he had so much trouble and work in getting these laws passed by the Legislature, that when there was the slightest indication to have the law changed, and in such a plausible way, he did not hesitate to say that he bristled like the fretful porcupine. It was not because the school was to be at Trinity, because he would like to see a *preparatory* school there. He opposed anything that *hinted* at a change in the laws. He knew it could do no harm and it might do much good for the Medical Society of North Carolina to state what kind of medical college in this State would receive its indorsement. All the medical men whose names were associated with that movement were on the best terms with him. It is impossible, even with the wealth of a Vanderbilt, to build up a good medical college in this State, for there is not the clinical material for the establishment of a hospital that could supply a college. He cited the case of the hospital at Raleigh with which he has been connected and which is absolutely free, and still it is impossible to keep it full. He thought there was

no better theoretical school in existence than the University of Virginia, but he thinks it should not grant diplomas—that it is derelict of its duty when it allows its students to graduate without a clinical experience. The honor and dignity of the profession of the State had dictated what he said, and he would not have felt that he had done his duty had he not said what he did.

Dr. Nicholson asked how the establishment of the college would affect the laws.

The President explained that the establishment of the college would not affect the laws, but it was the last clause that he feared, which provided for a change of the laws to correspond with those in other States—to give the college the power of granting a diploma which would stand in the place of an examination by the State Board of Examiners.

Dr. Long called attention to the fact that Dr. Crowell had disclaimed any intention to do that.

The President said he was only explaining his reasons for his expressions in his Address.

Dr. Cheatham asked if the President were not a lecturer in a college in the State that granted diplomas, and whose graduates came before the Board of Examiners and obtained license to practice.

The President said it was true, but that from the environment and poverty of the negro he could not live in a large city and receive his education there. If the gentleman could show him any way by which the negroes could get their education in the better schools he would immediately resign.

Dr. Crowell said he would like to see the Society express itself as to what it regards as a medical school that may grant diplomas.

The President said such a suggestion was embodied in his Address.

Dr. Crowell said the impression is abroad that the medical profession is opposed to medical schools, probably from the great zeal with which they have guarded their profession and for which he honors them. He thought it very unfortunate that scientific bodies could not understand each other, because he believes they are capable of being of help to each other. He thought the time had come when the high institutions of learning might look upon the

Medical Society as their friend, and believes all that has been said has been in good will.

Dr. Booth said that the medical profession was not opposed to medical schools, but to *one-horse* medical schools. After the establishment of medical colleges in the large cities of the North and West every State must have its medical college, and even each locality must have one. He said the physicians in North Carolina had not had an opportunity to fit themselves for teachers, and there are not seven of them in the State who are capable of being professors.

The Committee on Credentials made a report, which was adopted

Dr. Walter Peyre-Porcher, delegate from the South Carolina Medical Society, was granted the pivileges of the floor.

Adjourned.

First Day—Afternoon Session.

The Society was called to order at 3 o'clock.

Financial Report.

The following report of the Finance Committee was read and received :

Asheville, N. C., May 26, 1891.

Your Committee having examined the Treasurer's accounts, find them correct, as follows :

To balance on hand from last year	$475 80
To amount collected	866 30
Total	$1,342 10
Expenditures by vouchers	$597 69
Balance on hand	$744 41

The Committee recommend an assessment of $2.00 for the ensuing year, that the salary of the Secretary be $125 and that of the Treasurer be $100 for next year, also that the traveling expenses of the Secretary and Treasurer to and from the meetings of the Society be paid out of the Treasury.

Your Committee feel that the thanks of the Society are due our

efficient Treasurer for the satisfactory manner in which he has discharged the duties of his office.

W. T. Cheatham.
J. W. McNeill,
S. W. Stevenson,

On motion the report was adopted. It being asked if the "traveling expenses" alluded to in the report referred to the hotel expenses, Dr. Cheatham said he understood it to refer to the traveling expenses only.

A telegram was received from Dr. L. G. Broughton, the Orator, also a letter from Dr. Francis Duffy, both expressing regret at not being able to be present.

Reports from chairmen of sections for unfinished and for new business received no responses.

Dr. Harrell asked to have his paper as chairman of the section on Practice referred, but the President postponed the paper that the author might read it himself.

Urinalysis.

Dr. J. W. Long gave an extremely interesting and useful lecture on Urinalysis, having his remarks condensed into a set of charts, which are given below. In opening his remarks, he said when he began the practice of medicine, I worked for several years in ignorance and uncertainty in trying to diagnose diseases of the kidney, and it was only after many years and much time and study that he was able to satisfy himself in regard to this class of diseases. Even in the last year or two the question of albuminuria and diabetes has been reopened; and some go so far as to say that albumin may be present in the urine during health. It goes without saying that before we can determine whether this may be present physiologically comes the question of the test.

The Urine—Selection of a Specimen.

1. Be sure you get the patient's urine.
2. Should be voided about three hours after a meal of mixed food.
3. Morning urine least likely to contain sugar or albumen.

4. Urine voided three or four hours after a meal shows effects of food and exercise.

5. Analysis should be made within six to ten hours after being voided.

6. If not, add resorcin—2½ grs. to the ounce.

Quantity.

1. Average 40 to 50 ounces a day.
2. Women pass less than men.
3. In disease ranges from total suppression to 30 or 40 pints.

Frequency of Micturition.

1. Diminished or increased frequency invites inquiry.
2. Rising at night demands investigation.
3. Increased frequency suggests :
   (*a*) Albuminuria.
   (*b*) Diabetes.
   (*c*) Bladder or urethral troubles.
   (*d*) In women (1) pelvic inflammations; (2) pregnancy.
4. Diminished frequency suggests :
   (*a*) Retention.
   (*b*) Suppression.

Color.

1. Normal—pale yellow, varies considerably.
2. In disease, ranges from color of water through various shades—yellow, red and black.
3. Colorless, absence of normal pigments.
4. Pale greenish color suggests sugar.
5. High color, absence of water and presence of uroërythrin.
6. Blood and bile give their peculiar colors.
7. Certain drugs produce characteristic colors.
8. Acid urines deeper colored than alkaline urines.
9. Vogel's scale of colors the best.

Reaction.

1. Always acid for whole twenty-four hours.
2. The degree varies much.
3. Acidity is due to acid sodium phosphates.

4. Reaction determined by red and blue litmus paper.

5. An alkaline reaction is due to fixed or volatile alkali.

6. Fixed alkali—excess carbonate of potash and ammonia in the blood.

7. Volatile alkali—carbonate ammonium due to alkaline fermentation caused by chronic inflammation.

8. Distinguished by red paper retaining blue color on drying if a fixed alkali.

9. Acid fermentation—oxidation, due to mucus and fungus.

10. Alkaline fermentation, due to unorganized ferment splitting urea into carbonate of ammonium and water.

11. Alkaline fermentation may take place in the bladder by micro-organisms introduced on dirty catheters.

Specific Gravity.

1. 1015 to 1025, as usually stated.
2. 1018 to 1023—Purdy.
3. Infants, 1003 to 1006 (m).
4. Any marked deviation demands investigation.
5. Pathologically, ranges from 1002 to 1050.
6. Increased in :
   (*a*) Diabetes mellitus.
   (*b*) First stages of acute Bright's disease.
   (*c*) Acute fevers.
   (*d*) Forced marches.
7. Decreased :
   (*a*) After first stages acute Bright's disease and all other forms.
   (*b*) Hysterical and spasmodic hydruria.
   (*c*) After large draughts of liquids.
8. Proportion of solids to liquids influences sp. gr. Rule : The less the amount of urea the less the sp. gr.
9. Squibb's urinometer the only reliable one, because—
   (*a*) It is standardized for 77° F., variations marked.
   (*b*) Air chamber is a double cone.
   (*c*) Jar is fluted.
   (*d*) Thermometer.

Causes of Turbidity.

1. *Mucus.*
   (*a*) Delicate cloud floating towards bottom.
   (*b*) Increased by irritation of genito-urinary track.
   (*c*) Of fever present in urine from females.
   (*d*) Heat, alkalies nor strong acids affect turbidity.
   (*e*) Increased by alcohol, dilute mineral acids, acetic and citric acids, by coagulating mucin.

(If mucus is abundant, pus is apt to be present—pus gives albumin reaction.)

2. *Earthy Phosphates.*
   (*a*) Present only in alkaline or fully acid urine.
   (*b*) Held in solution by free carbonic acid.
   (*c*) Dissipated by acids.
   (*d*) Increased by alkalies and heat.
   (*e*) Source of error in heat and acid test for albumin.
3. *Mixed Urates.*
   (*a*) Uric acid combined with potassium, ammonium, sodium, calcium and magnesium.
   (*b*) Soluble at temperature of body, precipitated at lower temperatures.
   (*c*) Uric acid, a bibasic salt, forms neutral urates and acid urates—the latter are much the less soluble.
   (*d*) Acid reduces neutral to acid urates.
   (*e*) Precipitates rapidly, settles, forming pink or white deposit.
   (*f*) Dissipated by heat and alkalies.
4. *Pus.*
   (*a*) Always pathological.
   (*b*) Opaque white sediment, settles rapidly in proportion to mucus.
   (*c*) Resembles urates and phosphate lime.
   (*d*) Increased by heat and acids—coagulate albumin.
   (*e*) Alkalies convert pus into a viscid, glairy mass—Bouner's test, based on this fact.
   (*f*) This reaction takes place after alkaline fermentation, and may occur in the bladder.
   (*g*) Urine with pus from pelvis of kidney is acid and contains little mucus.
   (*h*) If pus is from bladder urine is alkaline.

5. *Chyle.*

(*a*) Always pathological.
(*b*) Fat in minute subdivision.
(*c*) Due to worm—*Filaria Sanguinis Hominis.*
(*d*) Common in tropical countries.
(*e*) From a mere cloud to milkiness.
(*f*) Fat rises to top and forms creamy layer.

To Purify Urine that is Turbid.

1. Filter—Sweedish filter paper.
2. Add liq. potassæ, one part to urine four parts, warm and filter.
3. Add magnesian fluid gtt. i, or ij, warm and filter.

℞.—Sulph. magnesiæ..... part 1.
Chloride ammon..... " 1.
Aquæ, dist..... " 8.
Liq. ammon..... " 1.
M.

Precautions.

1. If flame touches test tube above, the liquid tube will break.
2. Hold side of test tube to flame to prevent explosive boiling.

[Dr. J. W. Long's completed lectures will be given in the body of the Transactions.—PUBLISHING COMMITTEE.]

Ehrlich's Test for Typhoid Fever.

Dr. Thomas F. Wood referred to the paper he presented at the last meeting of the Society, saying that as the test was then a new thing and somewhat in the experimental stage, he sent out to several members of the Society (all who made application therefor) some of the reagents, with full directions for making the test. He hoped they would give their experience. He had a good many laboratory notes on the subject, but forgot to bring them. Ehrlich himself has modified the test as originally given. [Described test.]

It has also been modified by Dr. Carl Simon, of the Johns Hopkins Hospital. Add to the specimen of urine to be tested about twice its quantity of absolute alcohol, and add to this the solution of sulphanilic acid. If typhoid is present, we will have the deep eosene color.

Dr. Simon also says he has found the small Erlinmeyer flask more useful for holding urine than the ordinary test tube. He observed to the Society at the last meeting that the test was then in the experimental stage. He believes it has now past this stage.

Dr. R. L. Payne, Jr., read a paper on

The Importance of Urinalysis in the Diagnosis of Obscure Diseases.

Dr. J. W. Long was more impressed with the importance of urinalysis since hearing Dr. Payne's valuable paper than ever before. He indorsed the paper heartily, and he and the author were together in believing there was no such thing as physiological albuminuria. He quoted on the subject the following extract from the *New York Medical Journal* of May 9, 1891 :

"If the albumin is found beyond question to be true serum albumin and not caused by cystitis, elytritis, trachelitis, etc., whether it be cyclic, permanent, transient, or intermittent, whether only traces are found or it exists in a measurable percentage, it never can be safely assumed that harm can never come of it. I speak of chronic conditions. Great vigilance should be exercised in the observation of these cases. The urinary secretion should be measured, the amount of solids estimated, and the nutrition of the system as regards growth or waste, etc., ascertained, the arterial tension and cardiac condition noted, and these data not once simply, but oftener if necessary, and in many cases for a continued period. "Renal inadequacy," a very suitable term, first employed, I believe, by the late Sir William Gull—that is, incapacity of the kidneys to form and excrete the proper amount of solids and a deficient formative capacity which usually accompanies marked albuminuria—is an important factor in the prognosis. If the amount of solids fall much below what should be voided according to the diet and weight of the patient, and that persistently, there is ground for believing that serious pathological changes are being or have been developed. The average amount of solids voided by a man in health being placed at 58 grammes, any great diminution for a continued length of time of solids excreted is significant. A very close approximation to the amount of solids (in grammes) voided can be obtained by Trabb's well-known simple rule—that is, reducing the number of ounces voided in twenty-four hours to cubic centimetres by mul-

tiplying by thirty, then multiplying this again by the last two figures of the specific gravity multiplied by two. Of course the diet, stature, weight of the subject, amount of exercise, perspira tions, etc., must be considered. Forty eight ounces being taken as the amount of urine voided in twenty-four hours and the specific gravity being 20, we would have about 58 grammes of solids excreted. The aid of the microscope should always be enlisted. In slight albuminuria and in albumina minima the microscope rarely shows any of the elements of renal inflammation. Proliferation of the connective tissue, mild catarrhal nephritis, and glomerulitis may exist for a long time unaccompanied by changes in the tubules. These in time are, however, likely to become involved, and then renal epithelial casts, blood-corpuscles and pus-corpuscles, variously, may be found. It has been a not infrequent experience with me, however, that cases have been pronounced albuminuric when the albumin has been simply an accompaniment of slight catarrh of the bladder or of the prostatic portion of the urethra. I have never seen these cases, no matter how slight, where I could not recognize albumin, sometimes not more than one two hundredth or one two hundred and fiftieth of 1 per cent., either by Tanret's or by my own test. If the cystitis is sufficiently marked for numerous pus-corpuscles to be found under the microscope, Heller's test will probably show a sharp line at least one-ninth of a line in thickness, which indicates about one-ninetieth of 1 per cent. of albumin. The urates, too, may show this same sharp line. But if we have renal albuminuria to deal with, if persistent, no matter how favorable all physical conditions may seem, we cannot assert with perfect confidence that serious lesions may not in time become manifest, and every precaution as regards dress, diet, and care in living should be observed. I should not class as intermittent albuminuria those cases produced by hard study, taking cold, etc."

Dr. Thomas F. Wood called attention to the marked alteration in the urine of those patients having the febrile symptoms of influenza. The urine was sometimes so offensive that they required it to be taken out of the room at once. At first he did not understand the significance of this. Examination showed that in a very large number of cases we have the reaction for indican, as in cholera, typhus and trichinosis. To obtain it the urine is boiled with a little hydrochloic acid, and a solution of chloride of lime is added, and it is shaken with a little chloroform, first taking pains to

cool the test tube. A violet hue will be imparted to the chloroform, showing the presence of indican. This points to the fact that the fever of *grippe* is one of graver import than we would give it credit for at first, and accounted largely for the slowness of convalescence. For some time there would be a persistence of indican in the urine. It is evidence of putrefactive changes in the intestine—putrefaction of the pancreatic products of digestion. Thus the kidneys are largely burdened with the work of carrying off the product which should be carried off by the bowel. In these cases a good dose of calomel did much good.

The Committee on Credentials made a partial report, which was adopted.

Dr. Karl von Ruck read a paper on

The Present Status of Tuberculosis.

[This paper will appear in full in the body of the Transactions.]

Dr. Bahnson asked for Dr. von Ruck's experience in regard to the danger of contagion in tuberculosis.

Dr. von Ruck said it had been his experience that those persons who were predisposed and having a pulmonary lesion were apt to contract the disease if the germ was inhaled.

Dr. Taylor gave his experience in the treatment of tuberculosis by the American method recommended by Drs. Gibbes and Shurley, of Detroit. In the last six weeks he had used the iodine injection and chlorine gas inhalation in 11 cases with gratifying results. Of course the first results are often misleading. Three of his patients have gained weight and four are holding their own. In tubercular laryngitis the larynx was improved, but he had not given these cases as thorough attention as he had given the others. The inhalation of chlorine cannot be borne at first by all patients, but a tolerance was soon obtained.

On motion Dr. von Ruck's paper was referred to the Publication Committee.

An anonymous communication was received by the President and was thrown into the waste basket without being read.

Dr. J. W. Byers read a paper entitled

Tuberculin and Its Failure.

He explained that he had no experience with the new treatment,

but that his remarks were based on theoretical conclusions entirely. In regard to Dr. von Ruck's results he was satisfied that these results can be obtained by other means.

Dr. von Ruck discussed Dr. Byer's paper, saying it was based entirely upon theory and speculation, and no practical experience was offered. The opinions of the author have therefore no more value than those of others who have simply read what they could pick up, and even in his reading the author does not seem to be up to the present time. He labors under a mistaken idea of the action of the remedy, and I am surprised that he is so ill-advised of the present views thereto; for instance, the coagulation theory was *only* "*suggested*" by Prof. Koch, and as long ago as last November it was shown that the action of the remedy was not such, and no one conversant with the literature on the subject would now think of it. Again, he speaks of the remedy in comparison with "vaccines," and I am not aware that it was ever recommended as a vaccine or for producing immunity, but on the contrary, it is to be employed as a remedy, and for the disease itself. The early use of the tuberculin without experience and in proper dosage, has now brought about more conservative modes of application, and while improper dosage was no doubt in many cases a hindrance to progress and even productive of unfavorable results, that does not speak against the remedy itself. For instance, if we desired to employ strychnia, and, ignorant of its proper administration, gave it to a patient in such doses that it would produce opisthotonos and other symptoms of poisoning, would we then write a paper entitled "Strychnia a Failure?" or would we not rather attribute our bad results to improper use of the remedy? Undoubtedly Prof. Koch and others who have investigated the action of the remedy *practically*, have thought of all the author's theoretical objections, and practical results must ever be the crucial test of this, as of all other remedies. While the author refers to Virchow's post-mortem findings as showing unfavorable results, he should, if he desired to be just, also have mentioned that the post-mortem showed nothing new or different from what has before and since been observed, when no tuberculin was given, and that Virchow himself also demonstrated healed lesions, and such as were in progress of healing, evidently having occurred under the tuberculin. Neither should he have ignored the hundreds of cures, and thousands of cases of improve

ment reported since its introduction by reliable authors, and even the first two months of its use in Germany according to the report of the minister of public instruction shows in 1,010 cases, treated in so short a time, that it averages only a little over three weeks, a a surprising number of cures and improvements, and while in more than half the cases no progress was recorded, they were treated on an average less than two weeks with less than five injections for each patient, and no one should be so unreasonable as to expect brilliant results in so short a time in a disease like pulmonary tuberculosis. The report includes many cases which only received one or two injections before the 31st of December, when the report closes, and in many of the cases the remedy is said to have been given to satisfy the patient rather than because benefit was expected. The cases were in all stages of the disease and were not selected. At present, as I have shown in my own paper, we look upon the action of the remedy entirely differently—the profession has conceded the system of overdosage and erroneous application, and I have shown from a five months experience in over a thousand injections, given to more than 40 patients, that all but two cases improved, seven have already been discharged apparently cured, many are greatly improved and their progress is towards a cure; in no case had we any injury or unfavorable symptoms to report, and the profession is now beginning to use the remedy as I have done from the beginning. As to the rabbits and guinea pigs, I have seen actual demonstration of the correctness of Prof. Koch's statements, and I would remind you that after Prof. Koch had announced the discovery of the tubercle bacillus an American author of no mean reputation attempted to prove that they were no disease germs at all. I suppose he has learned better now. As I have stated in my paper and other articles on the subject, while I recognize the specific action of the remedy, we are in no position to use it to the exclusion of all other means, but as Prof. Koch himself suggested, we should combine its use in properly selected cases (without falling into routine methods), with all other means heretofore found useful; to this end he suggested surgical aid, special investigations, the employment of climate, etc., etc. The author referred in the discussion to the remedy as savoring of Homœpathy. Well, what if it did? If Homœpathy *should be found to be true*, would any of us wish to practise anything else? But there is no danger of

having to give up our belief, neither has the remedy of Koch, in its application or action, the least resemblance to it: we do not expect to "drive out a poison with the same poison;" as we now understand the action of tuberculin, we employ it to increase the effect of a similar product generated in the tubercular lesion, and acting upon the periphery, whereby we again produce irritation, after the tissues had become accustomed to that generated within the body; by such irritation we get more blood, more leucocytes and more blood serum to the part, and in consequence we have better cell nutrition, better phagocytosis, and the destructive action of blood serum upon the bacilli, we get formation of connective tissue and favor the encapsulation and pressure-atrophy of the tubercle, and this is a physiological cure in accordance with every principle of "rational medicine" of which this Society is the exponent.

Dr. Weaver had been disposed to place himself on the side taken by Dr. Byers until the last few weeks, but since learning a few things at the center of medical learning he has been obliged to change his views some. In the *Polyclinic* he has seen the treatment of lupus and tuberculosis. There has been a reaction in the last few weeks participated in by many of the leading New York physicians, who think that the remedy has come to stay; that it was a very dangerous remedy in the hands of inexperienced persons; that in well-selected cases and with care there was invariably good results from its use. In conversation with Dr. Loomis he put some questions to him in regard to the treatment of tuberculosis and the influence of the Koch treatment on pulmonary consumption. He said, in substance, that it will not cure anybody, but it will help the patient to get well provided he is surrounded by the proper hygienic influences. In answer to a question as to the method of its action, he said he believed that the proper administration of the medicine in sufficiently small and well-regulated doses produced a certain influence on the lung tissue, setting up a new inflammation whose tendency is to heal; and that wherever and whenever a general reaction was produced it is administered in too large doses, and hence becomes poisonous. In the case of large cavities there would be too much inflammation set up with necrosis and a migration of the bacilli to other parts of the body.

Report on Results from the Use of Tuberculin.

Dr. Thomas F. Wood read the following report from Dr. Joseph Jones, of New Orleans, in reference to the results obtained from a bottle of tuberculin sent from the President of the United States to the Governor of Louisiana :

Dr. Jones tendered a portion of the lymph received to Professor A. B. Miles, House Surgeon of Charity Hospital, N. O., receiving the following report from the Board of Administrators of Charity Hospital, signed by Prof. Joseph Jones :

"Dr. Miles reported relative to 'Koch's lymph,' in which he said the world was taking interest.

"Dr. Joseph Jones had received a vial and tendered it to the hospital. He had placed a notice on the bulletin board, inviting others to use it in safe bounds, if they thought proper.

"No one had applied to use it. For himself, he did not care to use it yet, as he did not deem the lymph or its substance sufficiently understood.

"It may yet be used in the hospital, but it would be best to await further results from it."

Assisted by my chiefs of clinic, Dr. Stanhope Jones and Dr. J. M. Elliott, I examined the cases in the wards under my care in the Charity Hospital daily, up to the middle of March, with a view to the use of "Koch's lymph," in the diagnosis and treatment of phthisis pulmonalis and other forms of tubercular disease.

This agent or drug was not used in the treatment of diseases under my care in the wards of the Charity Hospital of New Orleans, as no case presented itself which I deemed suited to the application of "Koch's treatment" without danger to the welfare of the patients.

OUTLINE OF RESULTS OF CHEMICAL AND MICROSCOPICAL EXAMINATION OF THE CONTENTS OF A VIAL OF KOCH'S LYMPH.

The objectives employed in the following observations ranged from 1-5 to 1-15 of an inch. Due precautions were taken to secure such results as were possible in the chemical and microscopical manipulation of the small amounts of material.

PROPERTIES OF KOCH'S LYMPH.

1. Reddish-brown liquid, with oily movement and consistency of thin glycerine.

2. Clear, with a few minute flocculi.

3. Musty odor like that of stale beef extract.

4. When burned emitted an odor like burning beef extract.

5. Reaction strongly alkaline.

6. When a drop of the undiluted liquid was placed in the eye of a living animal it appeared to cause a disagreeable sensation, attended with closing the lids temporarily, but it induced no permanent irritation or inflammation. A repetition of this experiment caused no perceptible injury to the eye or animal.

7. No appreciable effects were induced by the lymph when administered internally, by the mouth, to living animals. The fluid in its innocuous effects, when applied to living mucous membranes, differed from the poisonous alkaloids, and from prussic acid and the cyanides.

8. Mingles rapidly and freely in all proportions with distilled water.

9. When injected in varying degrees of dilution with distilled water (50 per cent., 25 per cent., 10 per cent., 1 per cent., 0.1 per cent.) into the subcutaneous tissues of living animals, cats, rabbits and guinea pigs, only slight local irritation and no sloughing were induced at the points of injection. The injections were followed by fever of greater or less intensity and duration. The animals appeared to regain their normal condition in varying periods, from four to seven days, but were reserved for future observation. The liquid appeared to be far inferior in its immediate effects when injected subcutaneously, to prussic acid, strychnine and serpent poison; neither did it manifest effects identical with septic poison.

10. Uncoagulated by heat.

11. Uncoagulated by heat and nitric acid.

12. Uncoagulated by nitric acid.

13. Chemically pure, absolute alcohol threw down from the lymph a flocculent whitish deposit.

14. Nitrate of silver threw down a heavy white deposit, showing the presence of chlorides in considerable quantity.

15. Soluble baryta salts gave slight precipitates.

16. Stannous salts gave no evidence of the presence of the salts of gold.

17. Microscopical examination of the undiluted of "Koch's lymph," with objectives ranging from 1-5 to 1-15 of an inch, revealed the presence of minute ovoid and rod-shaped bodies, resembling the spores and bacillus of the bacillus tuberculosis as originally described by the eminent microscopist, Robert Koch. These micro-organisms, in their size, structure and behavior, with staining fluids, corresponded with the bacillus tuberculosis.

18. When the "lymph" was diluted with boiled, distilled water, and preserved in chemically clean test tubes, the mouths of which were carefully guarded by antiseptic cotton wool, the fluid became turbid. Microscopical examinations revealed the fact that the turbidity was due to the multiplication of micro-organisms presenting physical and chemical properties similar to those of the bacillus tuberculosis.

19. The addition of a drop of the "lymph" to "Pasteur's sterilized liquid" was followed by the development of the spores and slender, rod-shaped micro-organisms, resembling the bacillus tuberculosis.

20. The spores and bacilli of "Koch's lymph" were cultivated, and with the necessary precautions to exclude all external germs from the atmosphere and internal objects, upon various substances, as serum of blood, boiled potato, white of egg and crystallizable sugar.

21. In cultivations of fresh blood the reaction was strongly alkaline, in those of the potato, white of an egg and sugar they were acid.

22. When a small quantity of the lymph was added to a carefully sterilized solution of crystallizable sugar, the clear solution became turbid and emitted a sweetish odor, similar to that which I have often observed to be exhaled by patients suffering from phthisis pulmonalis in the advanced stage.

CONCLUSIONS.

(*a*) The active principles of "Koch's lymph" appear to reside in a colloid nitrogenized compound, coagulable by absolute alcohol, and in living germs, micro-organisms, spores and bacilli, similar to

those of the bacillus tuberculosis, and capable of multiplication within and without the living organisms.

(*b*) The potent effects of Koch's lymph, when introduced into the blood of healthy and diseased human beings, may be referred in part, at least, to the rapid multiplication and action of micro-organisms similar to, if not identical with, the bacillus tuberculosis.

(*c*) The results of the chemical and microscopical examination of the contents of this "vial of Koch's lymph" have led me to exclude this liquid from the list of remedial agents.

I beg to be permitted to say that in the effort to discharge what appeared to be my duty, I have endeavored to serve the art and not the trade of medicine, believing that honorable, legitimate medicine has no secrets to conceal, and holds no remedy which is not the common heritage of the glorious brotherhood of the noble republic of science.

With great respect and with many thanks for the generous consideration of your Excellency, I have the honor to remain

Your obedient servant,

JOSEPH JONES, M.D.

Committee on Necrology.

The President appointed as the Committee on Necrology Drs. W. H. Lilly, J. A. Hodges and W. H. Harris, and urged them to make a full report.

Adjourned.

SECOND DAY—MORNING SESSION.

The Society was called to order at 10 o'clock.

Visiting Physicians Welcomed.

Visiting physicians from other States present were welcomed and invited to take part in the proceedings of the Society.

Committee on Credentials Ask for Instructions.

Dr. Fletcher, from the Committee on Credentials, asked for instructions from the Society concerning the applications of certain physicians who had registered according to the law, but not having

graduated; they had, however, taken the trouble since their registration to take a course and graduate. The President instructed the Committee that, as these gentlemen had complied with the laws, they should be recommended for membership unless there were objections raised. No objections were made to this ruling of the President.

Letter of Regret.

A letter of regret was read from Dr. Willis Alston.

Dr. Booth Makes an Explanation.

Under the head of unfinished business Dr. S. D. Booth asked to make an explanation of his remarks of the day before, and which seemed to be misunderstood by some. He did not say that there were not seven physicians in North Carolina that were not capable of being professors, but that there are not that number who are competent to fill professorships now in a college authorized to grant diplomas; he thought there are fifty or a hundred who are capable of becoming professors.

Report of the Committee on the Records of Confederate Medical Officers.

Dr. Thomas F. Wood made the following report from the Committee on Confederate Medical Officers :

Your Committee appointed at the Oxford meeting in 1890, to rescue the records of Confederate medical officers from loss and oblivion, report as follows :

A provisional list of Confederate medical officers, as far as could be found from all the sources of information available, was sent out to all the survivors whose present address could be ascertained. Many responses have come in and the completed work promises to be worthy of the effort which is being made to obtain it.

Your Committee have had printed this Provisional List for distribution among those present, with the request that each person see that his record is correctly stated. It is desirable that each should give date of commission, campaign in which he served, hospital and staff appointments, date and place of graduation, and other record of profesional attainments since the war, with present place of residence.

To the friends and survivors of medical officers it is especially urged that pains be taken to see that the names of their friends or kindred who served in the Confederate Army should be put upon the record with all the details.

The Committee also desires that any one having a photograph of deceased friends and those survivors who are willing to furnish them to the Committee would do so, in order that the record book of the Committee may be complete, thus enabling them to turn over to the Society a volume that will be a lasting memorial of the medical officers of the Confederacy.

THOMAS F. WOOD, for the Com.

ASHEVILLE, May 27, 1891.

He asked that the Committee be reimbursed for the expense to which they had necessarily gone, and, on motion, it was so ordered by the Society. The report was received.

Vacancy Filled on the Committee on Credentials.

Dr. Moran being called away, the President appointed as his substitute on the Committee on Credentials Dr. R. Harris Fletcher.

A paper was read by Dr. O. McMullen, Chairman of the Section on Surgery.

On motion the paper was referred to the Publication Committee.

Substitute Appointed on the Board of Censors.

The President appointed Dr. W. H. H. Cobb, of Goldsboro, on the Board of Censors to fill the vacancy caused by the absence of Dr. O'Hagan.

Dr. H. Longstreet Taylor read a paper on

Thoracic Surgery,

which, on motion, was referred to the Committee on Publication.

Dr. J. W. Long, in discussing the paper, said he was in hearty accord with the writer, and remembered having seen mentioned the method of drainage described by him. To emphasize his treatment, of empyema, he would relate the following case :

A young woman, the mother of three or four children, was taken, on the 7th of April, with severe pains in the mammary regions, which lasted for ten days and were made tolerable only by large

doses of morphine. He was not the attending physician, but saw the case on the 8th of April in consultation, and diagnosed it as a case of pleurisy. Found the pleural cavity rapidly filling, and on the 10th advised aspiration. Aspiration was not popular in that family, and the result of his suggestion was that he was treated so coolly that he decided not to go again till sent for. This was the case at the end of five days, when he aspirated and drew off 35 ounces of pus. He only half emptied the cavity, and the next day drew off 65 ounces, emptying the cavity entirely. Before commencing the operation the apex of the heart was in the left axilla, and after the operation it had moved toward the right about four inches. He advised putting in a drainage-tube, but the proposition would not be listened to. It was three weeks before the drainage-tube was permitted to be used, and during this interval the woman miscarried at about twenty weeks. While making preparation for the insertion of the tube the pus broke through a bronchial tube, and so relieved the patient that she refused again to have the tube put in. In about ten days, however, he made an incision between the seventh and eighth ribs and put in two drainage-tubes after evacuating much pus. The temperature soon fell to normal, the cough ceased immediately, there was no more expectoration, and when he left for the meeting the woman was sitting up in a convalescent state. He thought aspiration in empyema bad practice, but in this case it was the best thing the patient would allow.

Dr. Hodges asked Dr. Long if leaving the tube with the open end exposed to the atmosphere did not counteract the antiseptic precautions used in the operation. The author thought not, as the pus did not become offensive.

Dr. Hodges thought the same antiseptic precautions should be observed after the thorax was opened. He mentioned the precautions used by some European surgeons, of having the extremity of the tube immersed in a glass cylinder containing about a gallon of water, and in which it remains all during the process of draining. Had considerable experience with paracentesis. The first two times he performed the operation he did not use the proper antiseptic precautions, and in these cases a subsequent removal of three ribs was necessary. He thought these operations would have been more successful if he had used the proper precautions or had removed the ribs immediately. He thought the Doctor was a little mistaken in

saying that paracentesis was not a safe operation. If the operation is done near a rib, the pus will cause that rib to degenerate, and it will have to be taken away.

Dr. Nicholson had operated three times on the same subject and the pus returned each time. He then put in a drainage-tube and protected the exposed end with carbolized cotton.

Dr. Bahnson thought he might be exposing himself to adverse criticism or even to ridicule, but he wanted to enter a protest against the present craze or "fad" of antisepsis. Theoretically it is very pretty, but to the average practitioner it is simply impossible to carry it out. In his limited experience of seven cases all had recovered without the resection of ribs, and by the old-fashioned plan of first finding the pus and then opening the ribs with a pair of bone forceps enough to permit the entrance of the drainage-tube. The first opening should be as low as possible—below the eighth rib, if possible. A counter-opening is made above, the tube is passed through both and the patient is left to get well. He has had no occasion to excise the ribs. He would have no hesitancy in doing it, not, however, for the purpose of letting out the pus, but to permit the thoracic walls to collapse, and so hasten the cure. Notwithstanding the widespread acceptance of the theory of antiseptics, his success with the old-fashioned plan of treatment made him averse to adopt a new process simply to be up with the times. His antiseptics are cleanliness of the hands and instruments, and then as little dressing as possible. He himself having undergone an operation, had been so painfully impressed with the bulkiness of antiseptic dressings that he asked Dr. Agnew to let him get well under the old method.

Dr. Taylor said that the antiseptic process of treating operations was no new thing now, that the results of operations under this method were so universally acknowledged that he thought a person was subjecting himself to very severe criticism to get up and speak of it in a slurring manner. He thought it was useless to waste words on the subject. He supposed that the gentleman in speaking of paracentesis referred not only to empyema, but to simple pleurisy. He thought the immersion of the tube in a vessel of water was not so much for its antiseptic effect as for its aspirating power.

Dr. Long Rises to a Question of Personal Privilege.

Dr. George W. Long rose to a question of personal privilege. He said: "As an erroneous impression has gone abroad, and has found its way to the daily press, that the conference of medical men at Durham, for the purpose of considering the feasibility of establishing a Medical Department at Trinity College, we think it due the public, the profession, President Crowell, of Trinity College, and ourselves to make the following statement:

"1st. We unanimously agreed that we would not consider the proposition to establish the Medical Department unless sufficient endowment was guaranteed the income from which would be ample to pay the salaries of the professors and all the expenses of said Medical Department without in any way depending upon fees from students.

"2d. We did not propose to in any way amend the medical laws of North Carolina, but on the contrary, emphatically said that any man receiving a diploma from said Medical College should be abundantly able to *meet all the requirements* of the Board of Medical Examiners.

"3d. As the statement has been made upon the floor of this Society that North Carolina did not possess the talent to fill the professorships, we desire to state further, that this conference in no way intimated from what quarter of the globe the professors should be chosen, but distinctly said that, with sufficient endowment, the best talent could and should be commanded.

"We respectfully submit the report herein, and ask the Medical Society of North Carolina to make record of same.

(Signed) "Geo. W. Long,
"Robt. S. Young,
"William R. Wood,
"W. T. Cheatham,
"J. M. Hays,
"A. G. Carr."

Dr. Booth moved that the resolution be spread on the minutes of the Society. Carried.

The Committee on Credentials made a partial report, which was adopted.

A Request from the Committee on Necrology.

A request as read from the Committee on Necrology, asking that all members will notify the Committee of any deaths known to them, and asked for further time, which was granted.

Report of Committee on President's Address.

The Committee to consider the suggestions in the President's Address made the following report:

Sec. 1. We heartily commend the efforts of our President in endeavoring to secure a more general and uniform enforcement of our medical laws, and unite with him in urging each member of this Society to use his influence to induce every qualified physician in his section to comply with these laws.

Sec. 2. Believing that the practical equipment of our profession would be increased by more thorough clinical training of medical students, we recommend that the State Board of Examiners be requested to require from applicants for license satisfactory evidence of their practical knowledge of diagnosis and treatment, to be determined by examination of patients, or otherwise, as they may determine.

Sec. 3. Inasmuch as all reputable medical schools now demand evidence of proper preliminary education on the part of students entering their classes, we emphatically insist that it is the duty of every member of this Society to make like requirements of every applicant proposing to study medicine under his direction.

Sec. 4. And while we heartily commend the establishment of preparatory schools of medicine at convenient points in our State, we believe that it is inexpedient and adverse to the best interests of the profession to countenance the organization of a college of medicine in the State unless it can afford to its students advantages in every way equal to those afforded by the best schools in the large cities of our country.

Sec. 5. Your Committee think that the election of the officers of this Society by ballot would be an experiment possibly fraught with more evils than the present method; but in view of the fact that some change in the manner of choosing the nominating committee may be advisable, we would suggest that the members from each Congressional District meet together on Wednesday of the session

and choose from their number a member of the nominating committee, which shall consist of nine instead of five members, as at present. This committee shall meet Thursday morning and nominate officers for the ensuing year.

Sec. 6. We unite with the President in urging upon the surviving surgeons of the Confederacy in our State the preservation of all records of interest to the historian and the profession.

We also advise that for the future any member of the Society in arrears for dues shall not receive the Transactions of the Society until such arrearages are paid, but he shall not lose his membership. But if he shall be in arrears for three or more years, he may be entitled to receive the Transactions upon payment of $5.00 in lieu of unpaid dues.

Respectfully submitted,

W. P. Beall,
J. Howell Way,
Frank W. Brown.

Motion was made to adopt the report.

Dr. J. W. McNeill thought there was one section that ought not to be included in the report. It was the one that was opposed to the resolution introduced at the last meeting. This resolution, in regard to the election of officers, had served its time.

Dr. Hays made a motion to amend the original motion by voting on the report by sections.

The motion as amended was carried.

Section 1—Adopted unanimously.

Section 2—Adopted unanimously.

Section 3—Adopted unanimously.

Section 4—Adopted unanimously.

Section 5—(The President suggested that, as this was the only section to which any objection was made, that the next section be acted upon and gotten out of the way.)

Section 6—Adopted unanimously.

Section 5 being read, the President suggested that Dr. McNeill's resolution in regard to the election of officers be taken up, and that this section of the report of the Committee be acted upon as a substitute for the resolution, that the officers may be elected in the manner adopted by the Society.

Dr. McNeill rose to speak in favor of his resolution, but was in-

terrupted by Dr. Hodges, who rose to a point of order. He held that action on the resolution was not in order, as it should come up as unfinished business.

Dr. McNeill explained that he called for his resolution yesterday under the head of unfinished business, and it was postponed to be acted upon at the time of the report of the Committee.

A motion was made to suspend the order of business and bring up Dr. McNeill's resolution to amend the Constitution. Carried.

Dr. McNeill read the present laws of the Society in regard to the election of officers and then his amendment as offered at the last meeting of the Society. The following is the original law and the amendment asked for by Dr. McNeill :

ARTICLE IV—*Of the Officers.*

Sec. 1. The officers of this Society shall be a President and four Vice-Presidents, a Corresponding and Recording Secretary and a Treasurer.

Sec. 2. A committee of five members shall be appointed by the President to nominate officers and honorary members, and these nominations shall be voted on *viva voce.* Each officer shall serve for one year, except the Secretary and Treasurer, who may serve for three years, or until others are elected to succeed them.

As amended :

Sec. 1—Unchanged.

Sec. 2—The officers shall be elected by ballot, a majority of all the votes cast being sufficient to elect. Each officer shall serve for one year, except the Secretary and Treasurer, who may serve for three years or until others are elected to succeed them.

He said it was not necessary to make any remarks on the resolution as it had lain over for a year, and therefore thoroughly considered by the members. Last year's vote for a Board of Medical Examiners had convinced him that the Society was in a position to manage its own affairs—that it was in a condition to elect all the officers they wanted. He thought there could be no delay in this election after the election of seven men on the first ballot. He could not conceive of any trouble in delay of the proceedings of the Society. He moved the adoption of the resolution.

Dr. Hodges thought the matter an important one. He claimed to have as much interest in the honor, the dignity and welfare of

the Society as any member, and was in hearty accord with the resolution. He thought this bond of union would bring the members together and elevate them and cause them to strive with one another for their own good and that of the Society. While he was impressed with the excellence of the President's Address, he differed from him on this question. He did not speak as one who knows better than others, but from an extended experience in such bodies as this he has never found that any trouble has resulted from the ruling of the majority. It was true that the American Medical Association elected their officers in this way, but that Association was different from our own in that there was such a large body of eminent physicians to select from—does not remember an instance where the physician elected to the presidency of that body was not an eminent officer. The Southern Surgical and Gynecological Association elect their officers by ballot and it has never caused any disturbance. While he recognized the difference in learning and in skill, there are no men in our Society who are eminent above all the other members. We are all on an equal basis, and it is hard to decide who should be our President when there are so many who are capable of filling the office. He thought it must of necessity be that if a committee is to appoint a man to an office, and there are several candidates for the office, they will give their friend the preference. He did not mean that they would show favoritism, but that the candidates being equally well qualified to fill the position, a man would think it almost his duty to try to help the one who had helped him. We are not a political body, and we will not allow anything of this kind to divide us and raise factions. He thought the Society could quickly decide whom they desired for President, and preferred that the officers be elected by the whole Society. Even if he were one of the young members of the Society he hoped that some day he may fill the office of President. He thought the election by Congressional districts would be a bungling sort of business. He said that the man who proposed the change was a defeated candidate for the Board of Examiners, and he does not feel the slightest animosity to those who voted against him. It does a man good to be rubbed up and trampled on occasionally—it will make him bestir himself and try to do something. He spurned the idea that the election by ballot would raise political factions and intrigues. He thought it would cause members to take more

interest in the meetings of the Society with the result of larger meetings. He was confident that Dr. McNeill did not propose the change with the idea of elevating any of his friends to the presidency—that he was animated by the best of motives. He hoped the resolution would be adopted.

The Secretary read two letters from medical societies of other States (Kentucky and Virginia). The former asked for some suggestion as to the election of officers, as they were dissatisfied with their present method of having them nominated by a committee appointed by the President. The latter recommended taking the election of officers out of the hands of the President; their Society had done so and were much pleased with the change.

Dr. Thomas F. Wood said there was only one gentleman beside himself on the floor who could remember the fact, but it was a fact, that the Medical Society of North Carolina, in its early years, did elect its officers by ballot. The gentleman to whom he referred was Dr. Summerell, and he could bear him out in his assertion that, after changing from the present method of nominations, which was copied after that of the American Medical Association, and adopting the plan of balloting, this Society very willingly went back to the method now in vogue. He asked to remind the members before going into this experiment that it was not a new one. The only reason why opposition was made to the ballot system now is because when it was the rule it did divide the Society into two factions, and separated from it some of its most distinguished members. He did not speak from theory or surmise, but from the actual history of the Society. He spoke of the great paucity of meritorious scientific papers in the Transactions of the Society. We have placed ourselves upon a high plain in the matter of medical education, and the world would expect the results to be manifested in literary qualities of the work done by our Society as it appears in the Transactions. There is no reason why it should not be equal to that of the other States. It would not, perhaps, become him to say so, but past efforts do not show the best education. The papers appearing in our Transactions are not the equal of those produced by some other States. A day of balloting means a day or two of preparation for balloting, with the result of crowding out scientific work, diminishing, instead of increasing, scientific productions. He thought if the resolution is adopted that it will become neces-

sary to have four, instead of three, days of meeting. This increased length of session may not be objectionable, but it is well to consider all these points.

Dr. J. W. Long expressed himself as indifferent to the adoption of the resolution. He only wished the good of the Society, but in view of the many murmurs of discontent, he wished to give one word of approval of the present mode of administration, under which the Society had grown to such great proportions as we see here to-day. He had been a member of the Society for ten years and had never held an office. One objection that can be offered is that the new members have to sit on the rear benches and see the officers elected and feel that they had no voice in their election. He has felt this himself, but he thought it not only did a man good "to be rubbed and trampled on occasionally," but that it was also a good thing for him to sit back a little and see how other people did things. He was satisfied with the way things had been done.

Dr. McNeill thought the time taken up by the balloting could be minimized by the adoption of some rules controlling the elections.

Dr. Carr said he had been a member of the Society for sixteen years and had held office six or eight years. Has heard murmurs of discontent ever since he has been a member. He thought the members wanted a chance and that it should be given them, and if it does not work well we can go back to the present system. He believed that the discontent among the members would cause more trouble than the change would, and will give the resolution his vote as an experiment.

Mr. McDuffie thought he had understood the feeling of the younger members of the Society for the past ten years. He had seen the feeling excited after each nomination of President for some years. When the Society met here ten years ago there was dissatisfaction expressed in regard to the election of officers, and six years ago a resolution was introduced providing for making the nominating committee nine instead of five—one member from each Congressional District. In the view of this very evident dissatisfaction he could not see why any harm could come from voting for the officer directly. He thought that the members who voted for the defeated candidate would get over their feeling of disappointment in a few hours.

Dr. W. J. Jones said his remarks would be like condensed sun

beams—they would burn deep. He thought this matter one that concerned our personal privileges. In short, the gist of the matter is that we do not want autocracy—we want democracy. He hoped the resolution would be adopted unanimously.

Dr. Picöt offered the following amendment to the resolution, which was adopted :

Provided, That any nominee for President at any meeting shall have been an active member of the Society for five years, including the year of his election, and shall have attended two out of the three meetings immediately preceding his nomination, including the meeting at which he is nominated.

The original resolution being put to the house, was adopted.

Dr. McNeill offered the following resolution, asking that it be made a standing rule :

Resolved, That no nomination be in order after the first ballot. That after the second ballot, if there be no election, all the names be dropped except the three highest. After the fourth ballot, the name having the least number of votes shall be dropped.

The following is the resolution introduced by Dr. Satchwell. (See page 9.)

Whereas, The rapid development of the Southern States, evidenced by investments in mineral, manufacturing and agricultural properties, and the greatly increased flow of capital and immigration now coming to the inviting South gratifies no class of citizenship more than its physicians; and,

Whereas, At the late meeting of the North Carolina Industrial Association, assembled in the city of Raleigh, a request was made of this Society, by formal resolution, to furnish the Southern Inter State Immigration Bureau with information relating to health in this State ;

Resolved, That the members of the North Carolina Medical Society pledge themselves to coöperate with the Southern Inter-State Immigration Bureau in furnishing to foreign investors reliable information from our respective sections on the prevailing diseases, if any, history of epidemics, sources and quality of drinking water, the topography, climatology and sanitary conditions existing in our individual fields of practice.

Resolved, That we recommend to the County Superintendents of Health and to our State Board of Health to coöperate with the State Boards of Health from other Southern States in furnishing the Southern Inter-State Immigration Bureau with the information referred to in the above resolution from North Carolina.

Conjoint Session.

The President announced that the hour had arrived for the Conjoint Session with the Board of Health.

The President of the Board of Health, Dr. H. T. Bahnson, took the Chair and stated that after quiet was resumed the Conjoint Session would come to order.

He said it was his duty to announce the lamentable fact that the Board of Health of North Carolina is still occupying the anomalous position which it occupied at its incipiency—a regularly organized Board without executive authority, appointed by the Legislature as an advisory Board on all matters pertaining to hygiene and the preservation of health. The services of such a Board are infrequently, one may say almost never, called upon, and we therefore have very little, if any, progress to report. To the few faithful who remain to hear the discussions and deliberations of this Board, I would like to make one or two suggestions: In the first place, the anomalous position of our Board as a simply advisory Board, without executive functions, has exposed us, and with us the medical profession of North Carolina, to what might properly be called a slight by the action of the last Legislature in determining the character of books on medical and hygienic subjects which should be used in our public schools, and I hope the matter will have a limited discussion, at any rate. I refer to the adoption, under the influence of the so-called "Woman's Christian Temperance Union," of a book on the influence of alcohol on the human system. The teaching of this book must be forced upon the youngest children. He regretted the ignorance of the State Legislature in entrusting the mental hygiene of our children to the Secretary of a body like that. It should have been referred to the State Board of Health, certainly to the conjoint action of that Board and this Society.

Another thing he wished to speak of was the want of interest which pervades the State on the important subject of health preservation and hygiene. It has been suggested to inaugurate a system of "missionary" sanitary conventions to be held in different parts of the State. Unfortunately, a movement of this sort must be entirely a labor of love, owing to the smallness of the fund at the command of the Board.

The third and last point to which your attention is asked is to

the fact that two members are to be elected to the State Board at this meeting. The terms of office of Drs. Wood and Hilliard expire at this time and their successors are to be elected.

The Secretary of the Board, Dr. Thomas F. Wood, said he would not detain the meeting with a full report, as the third biennial report was just to hand from the publishing office, and these would be distributed to the members present. He would, however, call their attention particularly to two or three points in the report. It will be observed that the Board has centered its efforts more largely on the matter of vital statistics. Whether or not North Carolinians think it is of importance to know how this teeming population come and go, gets sick and gets well or dies, it is an important matter, and they must understand that the eyes of the statistical world are upon us, and these things are sought after. It is not necessary to speak of this to the people of Asheville, for they already understand it. Intending immigrants want to know all these things concerning the weather and the death-rate. We have gathered and tabulated these facts, and they are based, in most instances, on the reports received from the superintendents of health. These reports are based on the death certificates of physicians, and all present will therefore see the importance of reporting all these facts to the Superintendent of Health.

He referred especially to the condition of the poor houses and jails in the State. It is an open secret that many of these were a disgrace to the State. There were men incarcerated merely on suspicion and dying from cold and exposure. We have carefully, year by year, given these conditions publicity through the *Bulletin* of the Board. Notice the results in the tables presented in the report—the establishment of new jails and poor houses, of hospitals in connection with the poor houses in several instances, and the general improvement in the sanitary condition of these institutions. We consider this a favorable augury that the people of North Carolina are beginning to understand that public health is public wealth. You are not all aware of the fact that the delay in the reports of diseases dangerous to public health, such as small-pox, cholera, etc., is doing a good deal of harm in some localities. It only happens occasionally that we have cases of small-pox in this State. As soon as a case of such a disease is known to a physician, he should report at once to the Superintendent of Health of his

county, and if there is no Superintendent, the report should be made to the Secretary of the State Board. As soon as we know of a case of small-pox or other contagious disease, we can place at the the disposal of the Superintendent of Health means for the prevention of its spread, and if the Superintendent is not certain of his diagnosis, let him call a consultation, and the State Board will bear the expense; or, if deemed necessary, a committee from the State Board will visit the spot and give its assistance to the Superintendent. He hoped every Superintendent in the State would read this report carefully and take notice of how far he had failed in doing his duty. Special attention was called to the table showing the prevailing diseases for the two years. In this report, taking a single county, the different seasons of the year could be compared as to the influence of each on health; or, taking any given season, the different counties could be compared. Such a table as this, if it could be made as accurate as mortuary statistics can be, would be of the greatest interest and importance, not only to the people in the State, but to those who are thinking of coming among us.

Election of Two New Members.

The election of members to fill vacancies being the next order of business, Dr. Weaver nominated Dr. Thomas F. Wood. The motion was made that Dr. Wood be elected by acclamation, but the law requiring the election to be by ballot, it was moved and carried that Dr. Faison cast the vote of the meeting for Dr. Wood. It was done and Dr. Wood was declared duly elected to be his own successor.

Dr. J. W. Long put in nomination Dr. S. Westray Battle, and Dr. McNeill nominated Dr. H. B. Weaver.

There were 54 votes cast, necessary to a choice 28. Of these Dr. Batttle received 31, Dr. Weaver 22 and Dr. Hilliard 1. Dr. Battle was declared elected.

On hearing his name put in nomination Dr. Battle asked to have it withdrawn on account of pressure of personal business. However, on being elected he thanked the Society for the honor, and said that he accepted it.

North Carolina Sanitary Association.

Dr. Wood announced that it was the wish of the State Board to

have a meeting of the Sanitary Association that was formed at Raleigh two years since. They wanted the meeting in conjunction with the Board of Health, and he wanted it spread abroad that it was not a meeting of doctors only, but that people in all trades and professions take part in these meetings and are especially asked, to come. The matters to be talked of are not medical, and the ears of those out of the profession who are present will not be hurt by jarring, incomprehensible medical terms. The proposition has not been definitely settled, but the day will probably be fixed for August.

Dr. Hays invited the Sanitary Association to consider Oxford in selecting a place for the meeting, and Dr. Summerell spoke in favor of Salisbury.

Dr. Wood said in that the meeting was to be on the missionary order, it should be held where there seemed to be the most ignorance in regard to sanitary science. He said that much good had resulted from these meetings of sanitary bodies, e. g., the city of Memphis had been helped to be one of the most salubrious cities in the South by the meeting within its borders of the American Public Health Association, this Association being invited thereto by the extremely unsanitary condition of the city, and its very high death-rate.

Dr. Hodges, in reference to the action of the Legislature in adopting certain books to be used in the public schools, said it had been the source of much controversy in the State, and asked if it were the intention of the Conjoint Session to take any action on the matter.

The President said he had brought the subject up only to show how the State Board of Health and the profession had been ignored in the matter, and to give it as his opinion that the Board of Health and the physicians are fitted, and should be asked to give their judgment on such matters.

Dr. Hodges said that, although some one had said that Dr. Wood was, in reality, the Board of Health, and while he recognizes Dr. Wood's untiring zeal in the work of the Board, *he must have the coöperation of you all.* If the influence of the Board was made to be felt by the masses through the physicians it could accomplish more good. He hoped the Superintendents of Health would remember the words of Dr. Wood and aid the Board with more

energy and interest than has been the case. The Board accomplishes a work many of you do not know of; and if you will take this Annual Report home with you and study it, and will then enlighten the people, you will do much to help the Board. And when we have the meeting of the Sanitary Association get your Mayor to come to that meeting, and come yourselves, and it will be made an important thing for the State. He referred to the success of the Raleigh meeting. He was not a member of the State Board at the time of that meeting, but he was a Superintendent of Health, and attended the meeting only to show his interest in the matter of State sanitation; but when he had been in attendance a very short time he became deeply interested in the proceedings. He said that the resolution sent up by Dr. Satchwell on yesterday and acted upon by the Medical Society would have been postponed and brought before this meeting if the Board were recognized as it should be. It was a matter for the Board of Health especially, and not for the Medical Society. There have been many good papers read in these meetings, but they have not been appreciated because they come from a body which even you physicians seem to ignore.

Dr. Harrell asked if a majority of all the members of boards of health were necessary for the election of a Superintendent.

Dr. Wood gave it as his opinion that it required only a majority of those present at the meeting at which the election took place, and that members could not vote by proxy.

In reply to a question from Dr. Harrel, if there was any way to reduce the number of mill-ponds in the county, Dr. Wood said he knew of no way except the statutory method of having the ponds condemned as public nuisances.

Details of the Organization of County Boards.

In answer to the question as to who has the authority to call a meeting of the County Board of Health, how often these meetings should be held, and when the meeting for the election of a Superintendent of Health should be held, Dr. Wood made the following explanation: If there is no county board in existence, the Chairman of the County Commissioners has to issue a call for a meeting of all those who are eligible to membership on the board. This call may be made voluntarily on the part of the Chairman of the County Commissioners or at the suggestion of some one who is

eligible to membership. After the meeting of organization he supposed that each board could make its own rules as to who could call a meeting of the board. In New Hanover county it has been the custom for the Superintendent to call special meetings, as being the one who more than any other comes in contact with those circumstances which call for the action of the board as a whole. He may either act voluntarily or on the request of one or more members of the board. Where there is no board organized, a meeting for organization may be held at any time and a Superintendent elected at any time, but his successor must be elected at a meeting held on the first Monday in the next succeeding September, and an election held every two years thereafter. If the time appointed by law for the election of the successor of an incumbent should pass without a meeting having been held, he would consider it equivalent to the reëlection of that incumbent; provided a notice of the meeting had been advertised. Otherwise the office should be considered vacant and a meeting called to elect a Superintendent to fill the unexpired term. The law requires that the meeting for the election of a Superintendent *shall* be held on the first Monday in September, the person elected to hold office two years. Special meetings of the board may be held as often as each local board shall desire.

The Conjoint Session adjourned.

The Society was called to order and immediately adjourned.

Second Day—Afternoon Session.

The Society was called to order at 3 : 30 o'clock.

On motion of Dr. Hays, the election of officers was made the special order of business for to-morrow morning under the head of "New Business."

New Process for Assay of Fluid Extracts—A Movement Giving Prospect of the Future Standardizing of Drugs.

There being no responses from any members placed on the programme to read papers, Dr. Wood described some processes for the standardization of fluid extracts, which, he said, had been made public only in the last three weeks. He said that the Pharmaco-

pœia Committee of 1890, and also that of 1880, have been desirous of establishing a standard for fluid extracts, but they have been kept back on account of the difficulty of any then known practicable process for assaying drugs. That difficulty has been helped by a recent process introduced by Mr. J. U. Lloyd, of Cincinnati, and made known at the American Medical Association meeting in Washington City two weeks since. He thought proper to present these processes here. The process, so far, has been confined to seven fluid extracts. The process is so simple that there is good ground for hoping that the list will be extended to other remedies, and so enable the doctor or the druggist, when he suspects the weakness of his drugs, to satisfy himself on the subject. The fluid extract of guarana being the easiest to assay, is the one which beginners should commence with. The process is so simple that Mr. Lloyd was thanked by a rising vote for discovering what these committees had been searching for so many years. The process is this: Take of fluid extract of guarana 5 c.c., triturate it with 1 c.c. of solution of perchloride iron. Add bicarborate soda in sufficient quantity to make a stiff magma. With 20 c.c. chloroform triturate the magma, pour off the chloroform, triturating it subsequently three times with 10 c.c. chloroform. Mix the chloroform, place in a tared dish and evaporate, and the resulting caffein, multiplied by forty, gives the percentage. The processes for other drugs vary little from this. Fluid extract of nux vomica is treated like the guarana up to the washing with chloroform; the chloroform is shaken with 1:50 solution of sulphuric acid. The aqueous solution is separated, treated with ammonia, redissolved in chloroform, this solution being placed on a tared vessel and the alkaloid resulting indicating the percentage of strength. It is not necessary to more minutely state the process to physicians, and the matter was only introduced to show what advances are being made toward the standardization of fluid extracts.

He exhibited the result of the process as done by himself, and said if the gentlemen would examine it they would see that Mr. Lloyd had discovered a remarkable process. In the process for nux vomica, being more difficult, he had not obtained as good a result, but that was not to be wondered at, seeing that he was a general practitioner, and not a chemist; but even in this the directions were so minute that his attempt, and it was his first, was not an entire

failure. This process would enable the pharmacists to check each other when they suspected the quality of the preparations they were buying. He cited the difference in the charges for the fluid extract of Cascara by different houses, one asking only 80 cents and the other $2.25 a pound, and said that one of these was either selling a very inferior article to that sold by the other, or else the latter was getting far too high a price for his goods. The facts in the case could not be learned by hearing the argument of either party concerned, but could only be ascertained by an actual test of the preparations.

Dr. S. Booth presented a paper on

Extra-Uterine Pregnancy.

The paper was, on motion, referred to the Committee on Publication.

Committee on Pittman Prize.

The Secretary announced that there would be a paper for the Pittman Prize, and asked that a committee be appointed.

The President appointed on that committee Drs. J. H. Tucker Thomas S. Burbank and N. B. Herring.

As Chairman of the Section on Practice of Medicine, Dr. W. H. Harrell read two papers, entitled

Summer Dirrhœa Among Children, and Some Notes on the Use of Cupric Arsenite in Acute Disturbances of the Alimentary Canal.

On motion, these papers were referred to the Committee on Publication.

Dr. J. Howell Way read a paper on

The More General Use of Chloroform in Non-Operative Labor.

The above paper was referred to the Committee on Publication.

A paper was read by Dr. W. P. Whittington, entitled

Inflammation of the Uterine Appendages.

The paper was referred to the Committee on Publication.

More About the Election of Officers.

The President asked the wish of the Society in regard to the election of the Essayist, Orator, etc.; that the action this morning practically abolished the Nominating Committee. He asked if it were the intention of the resolution that all these committees, etc., are to be elected by ballot.

Dr. McDowell thought the resolution referred only to the Presi dents and Vice-Presidents.

Dr. Graham called for the reading of Dr. McNeill's resolution.

The President held that, as the resolution read "officers," it refers to those defined in the By-Laws as officers; that the By-Laws provide that the officers shall be "a President, four Vice-Presidents, a Corresponding and Recording Secretary and a Treasurer."

Dr. W. J. Jones thought the resolution was intended only to take away from the Nominating Committee the election of the presiding officer, and that all the others were to be elected as before. He moved that the President appoint a Nominating Committee, who shall appoint all the officers but the President.

The Secretary read the resolution as adopted at the morning session, and the President decided that it was the intention of the resolution that all the officers defined above should be elected by ballot, and that it was in spirit the adoption of the resolution as presented at the last meeting. He did not like to take the liberty of appointing a Nominating Committee after the position he had taken on the subject—that, although he still holds to his opinion in the matter, he yields gracefully to the wishes of the majority.

A motion was made by Dr. McNeill and seconded, that the President appoint a Nominating Committee, who shall name all the officers except those mentioned above and defined in the Constitution as officers.

The President said the Constitution does not say how the Board of Censors shall be appointed, whether by the President or the Nominating Committee.

Dr. Reagan offered an amendment to Dr. McNeill's motion, that the Nominating Committee shall name the Board of Censors. The motion, as amended, was carried.

Nominating Committee Appointed.

The President appointed the following on the Nominating Committee: Drs. J. F. Beall, J. W. Long, D. N. Dalton, W. P. Mercer and Joseph Hill.

Dr. Albert Anderson read his paper as the Chairman of Section on

Pathology and Microscopy.

On motion, the paper was referred to Committee on Publication.

Dr. Bahnson stated that Dr. Daniel Lewis, a distinguished member of the New York State Medical Society, was present, and asked that the courtesies of the floor and a hearty welcome extended to him.

The President explained that Dr. Lewis' name had been included in a list of names to whom the privileges of the floor had been extended in the morning, but that he had no doubt the Society would be glad to emphasize that action.

On motion, the Society again expressed their pleasure at having Dr. Lewis present, and invited him to take part in the proceedings of the Society.

On motion of Dr. Hays, the Annual Discussion, to be opened by Dr. Galloway, was made the special order for the evening session, the Orator being detained at home from sickness and the results of an injury sustained some time since.

On invitation from the President, Dr. Daniel Lewis made a few remarks to the Society.

Dr. Daniel Lewis' Remarks on the Method of Choosing Officers.

He said he had great confidence in the taste of the Society in choosing a man by the name of "Lewis" for their President. He had felt some delicacy in coming to this meeting because his Society had never sent a delegate to North Carolina; but he had had some dealings with some of the members and thought he could face them. Another thing was, his Society was somewhat advanced in youth at the time this one started—they had about fifty years the start of the Medical Society of this State.

He had been much interested in the discussion on the manner of the election of officers, and thought the plan just adopted of electing them by ballot, would have to be somewhat modified before long. It had been the case in his Society, and now there was a

committee consisting of a member from each Congressional District. These, with one member appointed by the President, make the nominations. If these nominations are unanimous, they are accepted by the Society, but if there be a division in the committee, a choice is made between the different candidates by ballot in the Society. The advantage of this is that only one ballot is ever required, while by the rules you have adopted there may be as many as five ballots.

Another thing upon which he wanted to congratulate the Society was the management of its politics. They thought they knew something of politics, but they did not. He finds here a Society which elects the Board of Health and the Board of Medical Examiners. As far as he could see, the Society controls medical matters entirely, except when the Legislature goes off and does something in spite of it. They have been in exactly the same position in New York; then came a new school of medicine and the Legislature formed another State Medical Society. Then the medical colleges! He wanted to congratulate North Carolina on not having a medical college. They had been the great obstacle in New York to getting a State Board of Examiners. Every step to advance medical knowledge had been opposed by the colleges. They have a State Board of Examiners—*three* of them, in fact—one for each school of medicine. They had arranged a compromise whereby the questions put to each were the same except in therapeutics. If we reached that profound state of confusion in thirty or forty years, don't you believe that you are going to enjoy the monopoly of this business as you do to-day. My opinion is this: that within the next ten years, unless you stand solidly on this question of State license, there will be enough influence brought to bear on the State Legislature that there will be another State Society, and then another and another. The State of Maine has three classes of doctors—faith-curers, gynæcologists and scientific men. There *is* only one school of medicine.

He saw in one of the Asheville papers, this morning, an article in which the editor said he hoped there would be in this State soon a "science of medicine." That man ought to be made a member of this Society and taught something about medicine. The different kinds of doctors all practice medicine now as we do. They make professions of being of some distinct school, but they must and do follow the one general school. There is a science of medi-

cine and the people and the Legislature must be made to recognize it. He hoped that the courtesies that had been extended to the delegate from the State of New York could be reciprocated by their Society to a delegate from this Society at no distant day.

On motion, the Society adjourned.

Second Day—Night Session.

The Society was called to order at 9 o'clock, and Dr. Thomas E. Anderson read the Annual Essay, entitled

The Evolution of Surgery.

The paper was referred to the Committee on Publication.

The President read a correction as to the discoverer of ether, sent up to the Chair by some one in the audience, claiming the precedence in its use for a Georgia physician. The note was from Dr. Daniel H. Howell, of Atlanta.

Dr. Booth wished to correct the statement about Dr. McGuire's puncturing the bladder. Dr. McGuire says he has never punctured the bladder, and thinks it a bad practice. He makes an incision down to the bladder and puts in a drainage-tube.

As the special order of business, Dr. W. C. Galloway read a paper on Perityphlitis.

Discussion upon Dr. Galloway's Paper on Appendicitis.

Dr. Jones thought it would be height of presumption to assault such a thoroughly prepared paper. He thought he had fortified himself by the best authority in this country, but had allowed some points to escape him. While the appendix vermiformis did not perform any physiological functions, it imperiled the lives of one-third the human family. In speaking of the symptoms, he said there was frequently no dullness on account of the interposition of a coil of intestine. He said Dr. Galloway did not mention the fact of attacks being recurrent, and he thought many of the recurrent attacks of so-called colic were in reality cases of perityphlitis. He thought it a disease of great obscurity, and thought the operation for its relief should not be lightly undertaken by an inexperienced person. He cited the custom of Dr. J. Marion Sims when he

wanted to do an operation for removing a stone from the bladder through the rectum, would not attempt the operation till he had done it several times on the cadaver. In regard to puncturing, he knew of two cases in which he could not resist the desire to explore with the hypodermic needle, and both cases recovered.

Dr. J. H. Williams thought the author of the paper had left nothing for him to say on the subject, except perhaps this: There are very few of us who are accustomed to abdominal surgery and can tell exactly what we have by the insertion of a finger into the abdominal cavity through a very small opening. On the other hand, we know that fully one-third of the human family, at some time in their lives, have one of these affections of the appendix. He did not think we could call all of these appendicitis. We have some cases of pure typhlitis from catarrhal troubles due to indigestion or from fecal impaction. It requires much experience to diagnose these cases accurately. He remembers some years ago having an attack of what we would now call appendicitis. The subject of operation was discussed, but he declined the operation, and got well without it. He has had two attacks since. All three cases arose from the presence of indigestible matter in the small intestine lighting up a typhlitis. He has not had a symptom of it in eight years. He has several times seen cases exactly similar. He has operated on only one case and he is dead. He might say he waited too long. Many of us live in the country, and when we are called to the bedside of a patient in this condition, what is the medico-legal position of the physician in such a case? He calls in one or two consultants; one suggests waiting twenty-four hours, another does not know what to say, and they finally put it off. Next day they return and the patient may be feeling better, and the next day still better. When shall we operate, especially as we know that one-third of the human race are at one time or another afflicted by this disease and recover?

Dr. Weaver thought the nomenclature of the disease was conflicting. When the inflammation is through the mucous coat we have peri- or para-typhlitis, and when the exudate is thrown out, peri typhlitic abscess. These are misnomers and should be eradicated. What is the appendix? An attachment of the cæcum. Where is it? It is in the peritoneal cavity, and not attached to the abdominal wall. Until recently it has been taught that the cæcum was not

entirely covered by the peritoneum. The place all these inflammations commence is in the appendix, and not in the post-cœcal tissues. As the author insists, early diagnosis and early operation is the only salvation for your patient. Do not wait until there is fluctuation and tympanitis. When there is pain and rise in the temperature and a tumor is present, we should operate. Do not wait for pus. Any old woman could tell when there is pus. As the nidus of the disease is nearly always found in the appendix, we can remove it. He mentioned a case which he saw operated upon in Mt. Sinai Hospital, and he does not think the operation a dangerous one in experienced hands.

Dr. Bahnson referred to his having already exposed himself to ridicule because he did not make his patients go about with a tube and a glass vessel full of water hanging to them in the drainage of the pleural cavity. He has not the faith to accept all these teachings, that the atmosphere that God has given us to breathe and sustain life, is swarming with ravenous wolves going about at all times seeking whom they may devour. Before he could recover from this he was called upon to believe that the virus from the wolf or the dog is so transformed by passing through the blood of a rabbit and reaching the spinal cord, which has hung up in a certain atmosphere, is able to prevent the introduction of rabies into a person bitten by a dog. He has not recovered from that yet. He is asked to-night to believe that one-third of the human race is afflicted with a disease that in twenty-two years has not come under his observation. At the same time he is told, and it is a slight tax upon his credulity, that, according to statistics, some 60 per cent. of those in whom it was recognized died. He had a suggestion to make after this dose of the evolution of surgery—that a chair be appointed in our medical colleges to give instruction on the very important branch in surgery, the evolution of faith in matters medical. And another—that we ask Dr. Galloway to find out from the great lights if it would not be well as a preventive measure to take away the appendix in very small children.

Dr. Robinson recited the case of a patient who was supposed to be suffering from an attack of colic. He was relieved with simple remedies, but the pain came on again in the course of twelve hours. It was again relieved, but there was some tenderness remaining. The patient had been treated about five days when he detected pus

and advised a consultation before operating. Here comes the difficulty of diagnosis. In the consultation they could not arrive at a decision at first. After awhile they did agree and did the operation, letting out about a quart of pus, but the patient died in about a week. He does not advise going into the abdomen haphazard. In another case, where he proposed aspiration, the patient died. He believes in operation immediately on a decisive diagnosis.

Dr. Thomas F. Wood thought that the treatment of appendicitis depends entirely upon the skill in diagnosis. The accumulation of clinical knowledge in the last few years has thrown great light upon shis subject, and it will not be long before those of us coming into contact with this disease will go plainly to work in the treatment of it. In the last twelve months he has seen five cases, four of these having reached the suppurative stage before being seen by him. Dr. Weaver remarks that any old woman can tell when there is pus, but there are some doctors in North Carolina who cannot, and he must confess that he is one of them. In the practice of general surgery it is necessary to aspirate the abdominal cavity in spite of the advice of specialists to the contrary. When we go to a case of this kind there is nearly always an objection to the operation, either by the patient or his friends, and this objection is only removed often by the ocular demonstration of "corruption." And we need not despair when the case reaches the stage of suppuration. He referred to a case of Dr. Bellamy's, reported in the North Carolina Medical Journal, which was aspirated and pus found beneath the linea alba and another at the root of the scrotum. An opening was made at each of these points with through drainage from the abdominal through the perineal opening. The cavity was washed out twice daily, and the patient recovered. In another case, that happened in the country, aspiration was the only means of convincing the attending physicians that the cavity should be opened. Another case has just occurred in the practice of Dr. Love, in Wilmington, in which we found all the symptoms of appendicitis. He understood that the case had been operated on in the last two days, since his departure from the city, with the result that no pus was found; the appendix to the touch appeared perfectly normal; but there was a great deal of inflammation with extensive exudation. The patient has since recovered. This shows that, with a limited experience, it does not require a great amount

of skill to go into the abdominal cavity, for if we aspirate the cavity and find pus, we can easily evacuate it, and then by drainage many cases can be saved.

Dr. Weaver presented the following conclusions to make his position clear:

1. Inflammation in the right iliac fossa are due to diseases of the appendix.

2. When an abscess forms it is found primarily *within* the peritoneal cavity, and not in the post-peritoneal connective tissue.

3. Many mild and some severe cases are cured without operation.

4. When high fever, localized pain and tenderness, with a hard tumor in the right iliac fossa occur, an operation is indicated. It is not wise to aspirate. Incision is the best for exploration and operation. The earlier the better—not later than the fifth day.

Dr. Jones mentioned a case of operation for strangulated hernia. The patient seemed to be getting along all right, but about the sixth day there was pain near the umbilicus. He aspirated and got pus. This was done the second time and the patient recovered. He mentioned this case to strengthen Dr. Wood's remarks.

Dr. Lewis, of New York, thought that, as carefully prepared as was Dr. Galloway's paper, he would be somewhat at a loss to know what course to pursue after listening to the discussion. He wanted to state what seemed to be the truth. It is not in accord with Dr McBurney's conclusions altogether. We all recognize his ability and the value of his researches, but do not for a moment believe that the doctors of New York are agreed in supporting his theory or treatment in these cases. It is not true, each from his own experience, that, instead of being a very frequent disease, we are speaking of one that is exceedingly rare—so rare that in the twenty years of practice and of hospital service, he can recall now only six cases? Of course, Dr. McBurney has had more, but he has operated several times when there was no evidence of disease of the appendix, and one time in the last twelve months, in one instance, the patient died. Is it, then, not bad advice to recommend an operation on all these cases as soon as the fifth day, for instance? Is it not creating a wrong conclusion to say we should operate on these cases at all, for we know that nine out of ten of them go on to suppuration and are opened in the old way? In those cases where suppuration takes place on the first or second day, and there

is a tremendous peritonitis, the patient will die, whoever operates. It is well to give credit to the advance of the last few years, and it is also well to have a conservative opinion, and if we do it will be a seldom operation, and that is what he wanted to advocate.

Dr. J. M. Hays referred to a case reported in 1885 in which he found at a post-mortem thirteen bird-shot in the appendix without any evidence of inflammation in the organ, the patient dying of a disease entirely different.

Dr. Williams explained as to the statistics referred to by him—out of 300 autopsies there was evidence of some form of disease of the appendix in 100.

Dr. Galloway, in closing the discussion, corrected Dr. Jones in his statement that he had failed to mention recurrent attacks. Dr. Jones seemed to think an exploratory cut allowable, and he did not see any harm in enlarging that incision and making the examination complete. He had not spoken against conservatism, and had said that mild cases were quite frequent and should not be operated on. He also reminded Dr. Jones that in the case he mentioned they went into the cavity sufficiently to let out the pus pretty freely, and thought there was as much risk in that as in a regular operation.

In regard to Dr. Bahnson's wit he said wit is a good thing to have, but it is not a good thing to go into the abdominal cavity with. He thought perhaps Dr. Bahnson, like the rest of us, had some cases of appendicitis that he had not recognized. He saw Dr. Abbey do an operation for appendicitis that an eminent physician had diagnosed as walking typhoid fever. He referred again to the statistics which so plainly favor an early operation.

A Message of Sympathy to Dr. Broughton.

On motion of Dr. Thomas F. Wood the Secretary was instructed to telegraph the following message of sympathy to Dr. L. G. Broughton, the Annual Orator:

"The Medical Society of North Carolina desires to express to you their hearty sympathy with you in your ill-health, and trust that you may, at no distant day, be restored to your former condition of activity in this Society.

On motion, the meeting adjourned.

Third Day—Morning Session.

The Society was called to order at 10 o'clock.

Vote of Thanks to Dr. J. W. Long.

On motion of Dr. Bahnson, the thanks of the Society were tendered Dr. J. W. Long for his able and skillful demonstrations in urinary analyses.

Pittman Prize.

The following report from the Committee on Pittman Prize was presented and accepted :

The Committee on the "Pittman Prize" beg to submit the following report : Only one paper has been submitted to the Committee. After careful examination and consideration of the paper, your Committee has unanimously agreed that there is an absence of that originality of research and scientific investigation, which, in the judgment of the Committee, should entitle the paper to the prize. The Committee therefore recommend that no prize be given.

(Signed) J. H. Tucker,
N. B. Herring,
T. S. Burbank.

Dr. Wood asked to emphasize the fact that there was a standing Pittman Prize of $100. He thought it had escaped the memory of the members of the Society.

It was suggested by some member that the attention of the members of the Society be called especially to this prize through an editorial notice in the Journal.

Drs. Payne and Foote Send Regrets.

Drs. R. L. Payne and Foote send their regrets at not being able to attend the meeting.

Priority as to the Use of Ether.

Dr. W. Peyre Porcher asked to correct the statements of last night in reference to the first use of ether. He claimed the priority for a physician of his State (South Carolina) who used it in an operation for the removal of the larvæ of flies from the nose of a man.

Dr. Way thought that even if these Southern gentleman did use

it, they were deficient in that make up of the medical man who has the advancement of the science of the profession at heart—that of making known to the public what they had discovered as a good thing.

The President announced as the special order of business the election of officers.

Details of the Election of Officers.

Dr. R. D. Jewett offered the following resolution in regard to the election of officers, which was adopted :

Resolved, That in the election of officers by ballot the following rules be adopted :

1. Nominations for all offices shall be made at the same time and posted on a black-board before any votes are cast.
2. When nominations are declared closed by the President no other nominations shall be in order.
3. In casting his ballot each member shall vote for one nominee for each of the several offices all on the same ballot.

Nominations for President being declared in order, Dr. McDuffie nominated Dr. W. T. Cheatham, of Henderson. Dr. Cheatham's nomination was seconded by Drs. Geo. G. Thomas and W. P. Beall. There being no other nominations for President, on motion of Dr. Tucker, the Secretary was instructed to cast the vote of the Society for Dr. Cheatham, who was declared duly elected.

Nominations for Vice-Presidents were declared in order. Dr. Thomas S. Burbank was nominated for First Vice-President by Dr. Thomas F. Wood; Dr. J. W. Long for Second Vice-President, by Dr. McDuffie; Dr. W. H. H. Cobb for Third Vice-President, and Dr. W. D. Hilliard for Fourth Vice-President. There being no further nominations, on motion, the Secretary was instructed to cast the vote of the Society for the nominees, and they were declared duly elected.

Nominations for Secretary were declared in order, and Dr. Picöt nominated the present incumbent, Dr. J. M. Hays. The nomination was seconded by Dr. Hodges, and there being no further nominations, on motion, Dr. Fletcher was requested to cast the vote of the Society for Dr. Hays, and he was declared duly elected.

Nominations for Treasurer were declared in order, when Dr. McDuffie nominated the present incumbent, Dr. C. M. Poole. The nomination was seconded by Drs. Murphy, Ramsay, Galloway and

Summerell. Dr. Nicholson moved that the Secretary cast the vote of the Society for Dr. Poole, there being no further nominations. As a fitting manner of expressing their appreciation of the excellent service Dr. Poole had rendered the Society in the discharge of his duties as Treasurer, Dr. Jones asked to amend the motion by suggesting that the Society elect Dr. Poole by a rising vote. The motion, as amended, was carried, and the whole Society standing, Dr. Poole was declared duly elected.

Committe on Nominations Report.

Dr. Long made the following report from the Committee on Nominations, which was adopted :

Orator—Dr. J. A. Hodges. (Resigned and Dr. J. W. Long was substituted.)

Essayist—Dr. O. McMullen.

Board of Censors—Drs. W. C. McDuffie, T. E. Anderson and W. H. H. Cobb, Sr.

Delegates to the American Medical Association—Drs. F. W. Brown, R. H. Lewis, A. G. Carr, H. T. Bahnson, Geo. A. Foote, R. L. Payne, W. P. Mercer, W. D. Hilliard, W. P. Beall, W. C. Galloway, Emmet Robinson, W. R. Wood, W. H. Harrell, C. M. Poole and S. L. Montgomery.

Delegates to the Southern Surgical and Gynæcological Association—Drs. Joseph Graham, W. H. H. Cobb and S. D. Booth.

Delegates to the Virginia State Medical Society—Drs. E. G. Moore, Richard Whitehead and J. C. Walton.

Delegates to the South Carolina Medical Society—Drs. T. S. Burbank, C. A. Meisenheimer and W. A. Stanton.

Committee on Publication—Drs. Thomas F. Wood, Thomas S. Burbank, J. M. Hays and Geo. G. Thomas.

Obituary Committee—Drs. W. H. Lilly, J. A. Rhodes and H. H. Harris.

Delegates to the American Public Health Association—Drs. Thomas F. Wood, J. H. Tucker and H. B. Weaver.

(Signed) J. F. Beall,
W. P. Mercer,
D. N. Dalton,
Joe Hill,
J. W. Long.

Dr. Hodges thanked the Society for their kindness, but he would respectfully withdraw on account of health and stress of business.

Dr. Booth moved that the resignation of Dr. Hodges be accepted, and that the name of Dr. J. W. Long be substituted.

The Committee on Credentials made a partial report, which was adopted.

Selection of a Place of Meeting.

It being in order to select the next place of meeting, Morehead City and Wilmington were put in nomination, and, after a good deal of discussion in favor of each place, Wilmington was selected.

Dr. Porcher Extends a Welcome to the Next Meeting of the Medical Society of South Carolina.

Dr. Porcher extended a welcome, not only to the delegates appointed to the South Carolina Medical Society, but to each individual member of this Society.

Counter-Prescribing.

Dr. Hodges asked the Society's indorsement of the following resolution to elevate the profession in the State. It was in reference to the counter-prescribing by druggists in North Carolina. He thought it might not, perhaps, be as great an evil to some as it was to him and the physicians of his town. He did not wish to reflect upon the druggists of his town, for he believed them to be the equals of any druggists in the State, but they do much of the work of the physicians. He wanted the Society to pass some resolution that would condemn this practice. According to the laws of North Carolina they should be prosecuted. Their physicians had determined to bring before the grand jury any one who gave a written prescription, or at least a prescription requiring scientific knowledge. He mentioned the instance of sexual diseases in which the druggists do the great bulk of the prescribing. The physicians had often had to undo the work of the druggists in the way of strictures produced by the indiscriminate use of astringents in these cases, and if we want to elevate the profession we must make the people know that there is a difference between a graduate of medicine and the druggist who allows himself to be called "Doctor."

The President said he was glad the matter had been brought up.

During the session of the last Legislature a bill was introduced and warmly advocated by our friend Mr. Hancock, making it unlawful for any physician to open a drug store in any town of more than 800 inhabitants without a license from the Pharmaceutical Association. He determined to fight the bill unless there was a clause inserted in it preventing the prescribing by druggists. He suggested the appointment of a committee of three to meet with a like committee from the Pharmaceutical Association with the purpose of correcting this great evil.

Dr. McDuffie asked to extend the remarks of Dr. Hodges as to the action of the Cumberland County Medical Society. It was probably the pioneer in instructing its President that were any druggists detected prescribing they be reported to the grand jury. They had a meeting with the druggists and they declined acceding to this, and even the boys in the drug stores are constantly prescribing for gonorrhœa. Much injury must result to the urethra from this prescribing by little boys. A boy 10 or 12 years old will contract a case of gonorrhœa, and, instead of going to a physician, he will go to one of these boys in the drug store who is as ignorant as himself, and be treated by him. He did not like to take action against the druggists while they are not here, but we are here, and this is an important matter.

Mr. Hancock, Secretary of the Pharmaceutical Society, Invited to Speak.

Mr. Hancock, Secretary of the North Carolina Pharmaceutical Association, being present, was invited to address the Society. He said that he was elected as the Chairman of the Legislative Committee at the last meeting of the Pharmaceutical Association. The Committee met in Raleigh, and, in consultation with several physicians, the bill was passed, with the assistance of several physicians. The Pharmaceutical Association heartily indorse the ideas expressed by this meeting, and the laws of the Association provide against the prescribing of druggists, and he hopes that this Society will pass laws condemning the practice. He said that he would do all in his power to get passed by the Legislature a bill against counter-prescribing.

Dr. Booth moved that the President appoint a committee to confer with one from the Pharmaceutical Association.

Dr. Long thought he could see day breaking on this subject, which has troubled the Society so long, when the druggists desire to accomplish the same end that we are driving at. He was glad to hear Mr. Hancock express himself as he had.

The motion of Dr. Booth was carried, and the President appointed on that Committee Drs. Booth, Hodges and Francis Duffy.

The Committee on Credentials made a partial report, which was adopted.

Thanks of the Society to the Medical Profession and Citizens of Asheville.

Dr. McDowell offered the following resolution, which was adopted :

Resolved, That the thanks of this Society are due, and are hereby tendered, to the medical profession and to the citizens of the city of Asheville for their generous and whole-souled hospitality during the session of our body in their midst; and that we will carry to our homes warm recollections of their kind and courteous entertainment, and bright memories of the entrancing beauties of this Queen City of the Mountains.

Inquiry by Dr. Thomas.

Dr. Thomas asked if there were any arrangements by which those physicians who were granted their license after the adjournment of the Society could join the Society at this meeting.

To provide for this the Committee on Credentials were empowered to admit such physicians to membership after the adjournment of the Society.

The Dr. Duffy Prize.

Dr. Booth called attention to the prize offered by Dr. Duffy, and asked that a committee on this prize be appointed. The President thought it not necessary to appoint a committee as there was no essay offered in competition for the prize.

Dr. W. H. Cobb Takes the Place of Dr. Hodges on the Pharmaceutical Association Committee.

Dr. Hodges thought it would not be possible for him to attend the Pharmaceutical Association meeting, and suggested in his stead on the Committee Dr. W. H. Cobb.

Dr. Purefoy's paper was referred by title to the Committee on Publication.

Report of Section on Therapeutics.

As Chairman of the Section on Therapeutics, Dr. W. H. Wilson read his report. It was referred to the Committee on Publication.

Dr. I. N. Taylor, as Chairman of the Section on State Medicine, read a paper entitled

An Appeal for State Care of All the Insane, from an Economic Standpoint.

Dr. Murphys' Remarks on Dr. Taylor's Paper.

Dr. Murphy asked to make a few remarks and call the attention of the Society to some of Dr. Taylor's statements more fully. He cited two cases—one, a woman from one of our best counties, was sent home to make room for a case that was considered dangerous. She was sent to the poor house and suffered all sorts of outrageous abuses at the hand of the keeper. Another woman, found in the jail in another county, was beaten with a rope by the jailor and came to the hospital with stripes on her back. There are many other such cases. Dr. Taylor has demonstrated that the State can provide for the care of all the insane by a tax of only four cents on the one hundred dollars. He was sure that as the cost of keeping the insane had already been reduced, it could be still further reduced, at any rate, to $115 per capita. The work done by the insane in his hospital has been calculated at $10,000 for the past year, and he is certain this can be increased. The condition of the insane should be made plain to every one in the State.

Dr. Hodges thanked Dr. Taylor for his able paper. He thought it a better paper than was the report of the Lunacy Commission of the State of New York, and for which report the author received much praise and more money. If we would improve the condition of the insane in our State it must be done through the doctors, and there is no better way than that Dr. Taylor has taken. He hoped that the paper will be printed and widely distributed among the people. He thought Dr. Taylor has done a great thing for the State. The State Hospital has made some of the insane real producers, which is a benefit to the patients as well as a source of revenue to the State. The insane have been considered as non-

producers. The thanks of the Society and the State are due to Dr. Murphy's hospital for the stand they have taken in the care of the insane. He moved a vote of thanks to Dr. Taylor for his paper, which was carried.

Dr. Murphy said that when he first went to the hospital he was told that mechanical restraint was absolutely necessary for the protection of the insane. After being there three or four years, he found that it was not necessary. For years they have not used it at all, and there have been less fighting and disturbances and less property destroyed, and in this way much has been saved to the State.

Resolution to Revise and Codify the Constitution and By-Laws of the Society.

Dr. Burbank offered the following resolutions, which were adopted :

Resolved, That a committee of three be appointed to state the Constitution and By Laws of the Society to date, and to suggest a compact and orderly substitute for the whole, for the consideration of the next meeting of the Society.

Resolved, That the sum of $50 be appropriated for clerk hire.

Dr. Geo. G. Thomas said that those interested in the laws of the Society have great trouble in determining what the laws really are. He thought such a revision was much needed.

Dr. Murphy moved to amend the resolution by making the sum appropriated $100. Carried.

The resolution, as amended, was then adopted.

The President appointed on the Committee Drs. Geo. G. Thomas, Thos. S. Burbank and R. D. Jewett.

The Committee on Credentials made a report. Adopted.

Installation of the President.

The time for the installation of the new officers having arrived, Drs. Picöt and Nicholson were appointed to conduct the President elect to the Chair.

Remarks of the Retiring President.

The retiring President thanked the Society for their kind and attentive coöperation in his efforts, which had been to the best of

his ability in trying to advance the interests of the Society. He congratulated the new President, assuring him of his confidence in the good judgment of the Society in making choice of their Presiding Officer, and wishing for him success in his administration.

Remarks of the New President.

Dr. Cheatham thanked the Society for the honor conferred upon him, and especially when he saw so many around him who were distinguished throughout the length and breadth of this Commonwealth for their professional ability. It should be his pleasure, as well as his duty, to serve the Society to the best of his ability.

Chairmen of Sections.

President Cheatham made the following appointments of Chairmen of Sections:

Practice of Medicine—Dr. J. W. McNeill.

Surgery—Dr. E. R. Michaux.

Obstetrics—Dr. W. O. McDowell.

Gynœcology—Dr. M. H. Fletcher.

Materia Medica—Dr. R. J. Noble.

Therapeutics—Dr. M. E. Robinson.

Pathology and Microscopy—Dr. F. R. Harris.

State Medicine and Medical Jurisprudence—Dr. W. H. Cobb, Jr.

Leader of Debate—Dr. F. W. Brown.

Committee on Duffy Prize—Drs. H. H. Harris, W. J. Jones and J. M. Faison.

Committee on Pittman Prize—Drs. J. H. Tucker, N. B. Herring and Thos. S. Burbank.

Dr. W. H. Wilson read a clinical report on a case of

Abscess of the Liver.

which was referred to the Publication Committee.

The Reporters' Fee.

On motion, $25 was appropriated for the services of the reporter.

The Time of the Next Meeting Fixed.

Dr. Thomas F. Wood said that, having conferred with his associates, he could name as the time for the next meeting of the Society the fourth Tuesday in May, 1892, being the 24th day of the month,

A Case of Hydrophobia.

Dr. Robinson, of Goldsboro, reported the case of a young man about 18 years old who had been bitten by a dog about three months previously. The messenger said he was suffering much pain, could not swallow, and water would throw him into a spasm. He found the patient very nervous, with an anxious expression of countenance, and with spasms of the facial muscles every fifteen or twenty minutes. The dog was not mad, and died from injuries inflicted by the patient. It was a small dog. He found the pulse 156, the heart acting feebly. He had taken no nourishment in some days. Gave morphine, gr. ½, hypodermatically. Could find only palliative treatment for hydrophobia mentioned in the text-books. The patient could not swallow chloral and bromide. Called in Dr. K. in consultation, who agreed with him in his diagnosis of hydrophobia. The report of a case of meningitis, improving under hypodermatic injections of antipyrin, suggested it in this case, and he give 8 grs., with the result of reducing the pulse from 156 to to 125. Waited fifteen minutes and gave 5 grs. more, repeating this last dose at the end of another fifteen minutes. In about an hour returned to the house to find that the patient had drank two saucers of milk. Gave 10 grs. antipyrin by the mouth every two hours. Saw the patient at 8 o'clock next morning. The nurse said he had been doing very well, but was getting worse again. Gave 20 grains of antipyrin and went away. The nurse said that during my absence he got up and went to the pail and drank a good deal of water, after which he drank a plate of soup and ate some tomatoes. Gave him an enema of chloral and bromide. About 2 o'clock he was taken with violent retching and died at 3 o'clock.

Dr. Thomas F. Wood asked if there had been any more cases of hydrophobia in Wayne county, and if he had reported this one to the Superintendent of Health, calling attention to the fact that all such cases should be reported promptly.

Dr. Robinson said that the dog that bit the man had also bitten other dogs which went mad. This resulted in all the dogs in his his town having to wear muzzles.

Special Publication of Dr. Taylor's Paper.

Dr. Reagan moved that the Publication Committee have printed

10,000 copies of Dr. Taylor's Report and distribute them in all parts of the State.

Dr. Thomas F. Wood seconded the motion with the amendment that the Committee use their discretion as to the number. He thought it would be a hard matter to dispose of so many copies to advantage.

It was suggested by some member that the Board of Health might be better able to print them.

Dr. Wood explained that the funds of the Board for printing were consumed in the publication of the *Bulletin*, but that if the Society will do the printing, the Board of Health will pay the postage; also that the *Bulletin* would bring out the salient points in the paper from month to month.

This last suggestion, being made a motion, was adopted.

Dr. Thomas F. Wood Presents the Photograph of a Case of Leucoderma.

Dr. Thomas F. Wood presented the photograph of a case of Leucoderma. He said although the disease is not dangerous to life or health, and is practically incurable, this specimen shows the great changes in the pigmentation of the skin. After infection by syphilis, a mulatto will become two or three shades lighter after being syphilized.

List of Members Present at the Meeting.

The following is a list of the members present at the meeting: Drs. C. M. Poole, Charles E. Hilliard, D. W. Courts, Robert S. Young, L. J. Picöt, J. M. Hays, W. H. H. Cobb, H. L. Taylor, S. W. Hunter, D. G. Caldwell, J. Howell Way, W. F. Chenault, F. W. Brown, D. N. Patterson, W. H. Bagwell, S. H. Cannady, J. R. Rodgers, R. J. Noble, B. S. Long, W. L. Best, J. J. Summerell, W. E. Headen, D. J. Watson, W. P. Mercer, R. A. Freeman, J. F. Sanderford, O. McMullan, Joseph Hill, J. F. Beall, G. W. Fletcher, Thomas F. Wood, N. B. Herring, F. R. Harris, E. Crowell, S. T. Nicholson, W. H. Lilly, D. T. Tayloe, J. L. Ray, R. D. Jewett P. B. L. Loftin, W. H. Harrell, M. C. Hunter, J. C. Walton, J. L. Edgerton, W. E. Turlington, J. G. Ramsay, W. P. Beall, J. G. Waldrop, George H. Moran, J. W. White, S. W. Stevenson, C. Few,

D. A. Stanton, J. L. Laxton, W. P. Ivy, H. K. Edgerton, S. W. Battle, K. P. Battle, J. O. Walker, Thomas S. Burbank, J. W. Byers, A. S. Harrison, W. T. Cheatham, S. S. Daniel, J. G. Riddick, H. T. Bahnson, W. C. Galloway, J. D. McMullen, J. W. McNeill, H. B. Weaver, W. P. Whittington, W. D. Hilliard, M. E. Robinson, J. H. Tucker, S. D. Booth, P. L. Murphy, J. W. Booth, H. H. Harris, Albert Anderson, R. L. Payne, Jr., J. A. Watson, W. O. McDowell, Karl von Ruck, W. S. Reagan, E. B. Goelet, W. J. Cloutz, J. F. Harrell, L. A. Hanks, D. F. Summey, J. R. Irwin, A. G. Carr, A M. Herron, J. F. Strickland, S. J. Montague, R. H. Lewis, G. G. Thomas, W. C. McDuffie, J. H. Bingham, W. P. Craven, C. Daligny, Joseph Graham, H. K. Thayer, J. M. Faison, C. P. Ambler, T. E. Anderson, J. H. Baird, J. J. Cox, G. J. Robinson, E B. Ferebee, J. H. Williams, J. A Reagan, J. A. Burroughs, J. W. Long, H. L. McFadyen, R. C. Ellis, J. C. Kirkman, W. M. Flow, A M. Ballard, C. G. Nichols, James McGuire, J. R. Pope, R. I. Wilson, G. W. Purefoy, J. C. Whiteside, A. T. Cotten, J. M. O'Kelly, J. A. Hodges, C. A. Meisenheimer, George C. Cope, J. A. Watson, M. H. Fletcher, D. N. Dalton, E. Porter, J. M. Taylor, W. L. Crouse.

Names Passed on by the Committee on Credentials.

The following is a list of the names passed on by the Committee on Credentials:

Drs. C. Few, D. J. Watson, J. Wellington Byers, D A. Stanton, R. A. Furman, J. O. Walker, James A. Turner, M. D. Kimbrough, T. J. Wilson, James McGuire, J. Watson, L. C. G. Nichols, W. W. Clarke, J. L Laxton, W. P. Ivy, R. H. Whitehead, H. L. Taylor, Karl von Ruck, C. P. Ambler, J. G. Waldrop, W. F. Chenault, W. M Flow, A. M. Ballard, V. J Klutz, Joseph R. Polk, J. F. Sanderford, H. L. McFadyen, R. C. Ellis, W. J. Cloutz, E. C. Starnes, R L. Walker, J. H. Wolff. L. S. Flow, A. J. Monroe, D. F. Summey, R. B. Baker, W. E. Headen, C. Daligny, D. W. Courts, E. Q. Houston, H. K. Egerton, J. C. Black, J. M. McCorkle, J. T. Reid and R. W. Palmer.

Adjournment Sine Die.

On motion, the Society adjourned to meet in Wilmington on the 24th day of May, 1892.

RICHARD H. LEWIS, M.D., President.

J. M. HAYS, M.D., Secretary.

A TRIP TO THE NORTH CAROLINA HOSPITAL.

A party of thirty-five or forty members of the Society took advantage of the invitation of the Superintendent and Directors of the North Carolina Hospital to visit that Institution at Morganton. They spent three or four hours there inspecting the grounds and workings of the Hospital, and expressed themselves as greatly surprised and highly gratified at the high state of perfection to which the present management have brought the Institution.

MINUTES OF THE BOARD OF EXAMINERS AT ASHEVILLE MAY 25TH TO MAY 30TH, 1891.

ASHEVILLE, N. C., May 25, 1891.

The Board of Medical Examiners, as elected at Oxford, in 1890, met at Asheville on Monday, May 25th, at 9 o'clock, a. m.

There were present Dr. W. H. Whitehead, President; Dr. Geo. W. Long, Dr. Robert S. Young, Dr. R. L. Payne, Jr., Dr. George W. Purefoy, Dr. George Gillett Thomas, and Dr. L. J. Picöt, Secretary.

The rules of the former Board were read, and, for the present, adopted. The different branches for examination were assigned as follows :

Chemistry and Pharmacy—To Dr. George Gillett Thomas.

Surgery—To Dr. W. H. Whitehead.

Anatomy—To Dr. Robert S. Young.

Physiology—To Dr. R. L. Payne, Jr.

Practice of Medicine—To Dr. George W. Long.

Obstetrics and Gynœcology—To Dr. G. W. Purefoy.

Materia Medica and Therapeutics—To Dr. L. J. Picöt.

The examination begun at 2 : 00 p. m. Monday, and were conducted in two large rooms of the Court House building, the Class being equally divided for greater comfort. The black-board system of examination was used.

The following resolution, offered by Dr. George G. Thomas, was unanimously adopted :

Resolved, That this Board hereby agrees in the examination of 1893 it will introduce a clinical feature in the examinations on Practice and Surgery. Such examination shall be conducted on a

plan to be made and submitted at a subsequent meeting, and a committee of two shall be appointed to formulate and submit such plans as will put this new feature into operation.

Drs. Thomas and Picöt were appointed to carry out the provisions of the above resolution.

It was ordered, on motion of Dr. Thomas, that the termination of a temporary license shall be on the morning of the first day of the Medical Society meeting succeeding the issue of the license, and such date shall appear on the face of the license.

There were 75 applicants. The following were granted license:

Dr. L. B. McBrayer, Asheville, N. C.
J. C. Montgomery, Concord, N. C.
J. Flake Carleton, Statesville, N. C.
W. H. Wakefield, Greensboro, N. C.
B. Ray Browning, Littleton, N. C.
Wade Hampton Atkinson, Washington, D. C.
A. Campbell, Snow Creek, N. C.
George J. Gouger, ————————.
John W. Saine, ————————.
R. C. Mattheson, Taylorsville, N. C.
Charles E. Walker, Huntersville, N. C.
Russell Bellamy, Wilmington, N. C.*
C. D. Jones, Lewisville, N. C.
C. W. Corriher, China Grove, N. C.
W. C. Steele,————————.
W. E. Fitch, McRay, N. C.
C. S. Gilmer, Greensboro, N. C.
C. C. Christian, Scotland Creek, N. C.
L. U. Burleyson, Flows, N. C.
John S. Marshall, Asheville, N. C.
T. N. Reid, Griffith, N. C.
M. C. Millender, Pigeon River, N. C.
F. L. Herman, Conover, N. C.
A. F. Houck, Lenoir, N. C.
J. J. Bryan, Battleboro, N. C.
G. A. Foster, Oakdale, N. C.
W. K. Reid, Griffith, N. C.

*Dr. Russell Bellamy, of Wilmington, N. C., was accorded the Appleton Prize for the best examination made this year.

Dr. J. R. Gordon, Friendship, N. C.
J. M. Sloan, Charlotte, N. C.
C A. Julian, Thomasville, N. C.
Robert F. L. Lefler, Mt. Pleasant, N. C.
O. S. Missildine, Tryon City, N. C.
Everett Reeves, ————————.
L. F. High, Thomas, N. C.
George M. Hackler, Mars Hill, N. C.
John R. Wheeler, Spring Hope, N. C.
N. G. Moore, Huntersville, N. C.
J. J. Davis, Woodville, N. C.
W. O. Spencer, Mocksville, N. C.
Charles S. Jordan, Asheville, N. C.
M. A. Foil, Mt. Pleasant, N. C.
Thomas A. Matthews, Battleboro, N. C.
E. G. Goodman, El Paso, N. C.
W. J. Martin, Davidson College, N. C.
Frank N. Register, Keyser, N. C.
R. H. Bryant (col.), Asheville, N. C.
J. H. Gibbon, Charlotte, N. C.
Robert Thompson, Sparta, N. C.
W. J. Hill, Statesville, N C.
T. P. Cheeseborough, Asheville, N. C.
G. E. Jordan, Altamaha, N. C.

Total, 51.

During the interval between the annual meetings of the Board in 1890 and 1891 temporary licenses were issued to the following:

Dr. J. W. Perkins.
C. W. Corriher.
Thomas A. Matthews.
A. J. Alston (col)
C. C. Christian.
—— McLeod.
W. J. Martin.
E. F. Corbell.
C. D. Jones.
O. S. Missildine.
C. W. Weaver.
William C. Kiser.

Dr. Harvey E. McConnell.
Charles E. Summers.
Charles E. Walker.
M. H. Crowell.
J. M. Kriley.
J. T. Rieves.
W. H. Wakefield.
C. A. Julian.
W. S. Leach.
P. F. Bethea.
J. H. Crawford.

These licenses all expired on the morning of the 26th of May, 1891. All persons practising by virtue of said temporary licenses who have not been licensed by the Board of Examiners at this session, are violating the medical laws of the State and liable to indictment.

The Board adjourned its session at 12 : 30 Saturday night.

L. J. Picöt, M.D., Secretary.

[APPENDIX.]

PRESIDENT'S ADDRESS.

By Richard H. Lewis, M.D., Raleigh, N. C.

(Delivered before the Medical Society of North Carolina, at Asheville, May 26th, 1891.)

Fellow-Members of the Medical Society of the State of North Carolina:

It would seem that under the inspiration of surroundings of such beauty and grandeur as this romantic "Land of the Sky" presents, lofty and noble thoughts, clothed in graceful and poetic language, ought to come to one almost unbidden; but unfortunately your speaker is not gifted with the divine afflatus, and must therefore confine himself to a prosaic statement of facts, with certain conclusions and suggestions derived from them.

In the decade that has passed since we last gathered in this prosperous and hospitable city, many things of interest and importance (as was to have been expected in this rapidly-growing age) have occurred. While we have been called on to mourn the departure to the Better Land of many of our noblest and best, and among them none with more sincerity than him who at that time filled the Chair I now occupy—Dr. Richard B. Haywood—and who delighted us with a characteristic address, so filled was it with quaint and interesting information, genial humor and kindly spirit; still, as an organization, we are proud to chronicle decided prosperity and marked advancement. In that time we have seen our medical laws so amended as to make them really effective, and, in the opinion of many outside our own borders, the best in the country; our Board of Health placed on a solid basis; our Medical Journal firmly established, and the general standard of the Profession gradually elevated, until now we claim, and in no boastful spirit, that its average is as high as in any State of the Union. But although these things are true, we have not yet reached the goal towards which should, in a united effort, continue to press earnestly forward. The subject of paramount importance and interest to the profession of the State, and therefore to the Medical Society of the State of North Carolina, remains, as it has been for several years past, the still further progress in the better education, and, *pari passu*,

professional elevation of those who yearly join our ranks. The accomplishment of these objects is to be obtained through—

1. The laws regulating the practice of medicine in the State.

2. The extension by the Board of Medical Examiners of the requirements for license.

3. The development of a decided *esprit du corps* among those already in practice.

4. The patronage of high grade preparatory medical schools.

1. THE LAWS REGULATING THE PRACTICE OF MEDICINE IN THE STATE.

The General Assembly, at its recent session, amended the law by extending the time of registration to January 1st, 1892, and by striking out the exhibition of a "diploma from a regular medical college, dated prior to March 7, 1885," as a condition of registration. The first amendment was thought advisable for the reason that the number of physicians in the State still unregistered, many of them men of such standing and influence in their communities as to defy the law with impunity, constituted a serious stumbling-block in the way of its enforcement. On one occasion, hearing that the law was violated in a certain county, I took it upon myself, as the representative for the time being of the profession in the State, to write to the presiding judge, asking him to charge the grand jury upon our law, and to the solicitor, requesting him to push the prosecution of the offenders. Notwithstanding the fact that the judge charged strongly in our favor, and the solicitor presented an indictment, with complete evidence in its support, the grand jury simply ignored the bill. So that, as much as I dislike to make such an admission, I am forced to confess that public opinion in one locality, at any rate, has not grown up to our present law; and it is an aphorism that no law can be enforced which has not public opinion behind it. This indifference on the part of the people, if not caused by, is certainly reënforced by, indifference or open defiance on the part of their trusted, and, in many instances beloved, medical advisers. As long as such a class of practitioners outside the law remains new-comers, who, realizing their ignorance and incompetency, refuse to apply for license; or those, applying and failing, who continue to practice, can find countenance and support. But if every man in the State, pretending to practice

medicine, who is entitled under our laws to register—no matter how incompetent, in fact, for the people are not always safe judges of scientific acquirements, and especially in the line of medicine—was on the registration book, those proposing to practice in violation of the law would not have any such moral support—they would stand out so exposed and conspicuous that few would have the courage to attempt it. It is true that the present Board of Medical Examiners, after consultation with the outgoing Board at the last meeting of the Society, adopted a special license to be issued without examination, on application, to all worthy physicians who, while entitled under the law, had failed to register, so that that they might legally do so. But the practical difficulty was that a great many knew nothing about that arrangement, or if they did, feeling safely entrenched in the support of their neighbors, were too indifferent to take the trouble to apply. Consequently it was thought wise to make it easier, in order that everyone having the right might be induced to register, and so the time was extended. To further assist in accomplishing this, I decided, after submitting it to the President of the Board of Medical Examiners, and obtaining his approval, to send the following joint letter to every Clerk of the Superior Court in the State. And it has been done :

RALEIGH, N. C., April 24, 1891.

CLERK OF THE SUPERIOR COURT,
————————, County, N. C.

DEAR SIR :—At the recent session of the General Assembly the law relating to the registration of physicians (Chapter 181, Laws 1889) was, as you doubtless know, amended by extending the time to January 1st, 1892, and by striking out in lines four and five of Section Four the words "or a diploma issued by a regular medical college prior to the seventh day of March, 1885. Hence, only physicians exhibiting a license from the State Board of Medical Examiners, or making oath that they were practicing medicine in this State prior to March 7, 1885, are now eligible to registration. In regard to what constitutes, in the eye of the law, "practicing medicine," we would respectfully call your attention to the appended extract from a recent letter from the Attorney General on this subject. At the same time we would request you, not so much in the interest of the medical profession as for the protection of the

people from ignorant and incompetent men, to exercise the discretionary power vested in you and refuse to register any one who has not a real *bona fide* practitioner of medicine before March 7, 1885, and in this State.

We would also ask you to use your best endeavors to induce all unregistered physicians in your county, who are clearly entitled to, under the conditions above set forth to register, to do so, for the sake of carrying out the law and of saving them from the danger of future prosecution.

The Attorney General, in his letter of March 14, 1891, says: "In 1887 the Supreme Court of this State was called upon to construe the same words ('practice or practicing') in its application to lawyers, and the Court laid down this rule: 'To constitute a practicing of law, within the prohibition of the statute, it is necessary that the person charged with its violation shall have customarily and habitually held himself out to the public as a lawyer, or that he demanded compensation for his service as such.' (*State vs. Bryan*, 98 N. C., 644.) It would seem that the Court intended to establish two standards by which to measure the words 'practice and practicing': (1) The customary and habitual holding oneself out to the public as a lawyer; (2) or that one occasionally performed some professional act and demanded compensation for his services. Of course the same principle of interpretation will apply to the Act in relation to physicians."

Very respectfully,

RICHARD H. LEWIS, M.D,
Pres't N. C. Med. Society.
W. H. WHITEHEAD, M.D.,
Pres't N. C. B'd Med. Exam.

Some will, before they think, doubtless be disposed to criticise the wisdom of what has been done, on the ground that it will let in a number of ignoramuses who are now shut out. For their comfort and satisfaction, I would call attention to the fact that very few of that class failed to register; and I would add that even if they were still numerous it would be much better to give them the privileges of a certificate of registration than to keep out many really good men, who are too strong with their people to be successfully prosecuted, and who, by living in open and, *ipso facto*,

contemptuous violation of the law, render it practically null and void. The customary non-observance of any law will surely make it a dead letter.

When the committee appointed at Fayetteville, with power to use their discretion in preparing and presenting to the General Assembly for adoption any amendments that they might deem wise, prepared the amendment requiring registration on the part of every one practicing medicine in this State, they realized that the exhibition of "a diploma from a regular medical college, dated prior to March 7, 1885," as a condition of registration, would admit without examination that class from other States; but after discussing the matter at considerable length with the eminent legal counsel employed, a qualification of it, so as to restrict the privilege to those practicing in our own Commonwealth, was found to so cumber and confuse the phraseology that, in view of the strong probability that very few who had been at work so long in other States would avail themselves of it, they deliberately decided to leave that one little hole open. It is true that the diploma condition might have been omitted altogether (as now), but it would have been neither just nor expedient to have forced large numbers of regularly graduated physicians, including very many most excellent men in every respect, who, in the concession made in 1885 in order to secure the greatest advance in all our medical legislation, viz: the penalty feature, were put on a level with licentiates, to register on oath, thereby placing them in the same category with conjurors, "root and yerb" doctors *et id omne genus.* The Committee, however, did not realize that this beautiful mountain country of ours would become, in so short a time, a sanitarium of such wide popularity; nor that numbers of the class of medical men who follow up the valetudinarians, as bluefish the shoals of mullets on our coast, might come into this section under the diploma clause. As soon as satisfactory evidence was furnished that it was a real grievance, inasmuch as the graduates had mostly registered, and as the Legislature had become too engrossed with other matters more interesting to its members to allow time for tampering with our law, it was thought safe to bring forward the amendment striking it out. The knowledge that some members of the Farmer's Alliance had given indications of hostility to medical societies generally; the information that a bill to repeal our present law

would be introduced; and the actual introduction of a bill entitled "An Act to regulate the charges of doctors," suggested prudence in agitating the subject of medical legislation. It appears that the Legislature of our sister State of South Carolina did abolish their Board of Medical Examiners, but, as it turned out with us, no hostility to our profession materialized. The bill to repeal was not introduced, and the act to regulate charges, etc., was so absurd that it was never called up. Most of you have no doubt seen and laughed over it in the JOURNAL. We were fortunate in having some strong members of the Society members of the Legislature—among them Drs. Speight and Galloway in the Senate, and Drs. Stancill and Tatum in the House, as well as other medical friends, not members of the Society, who watched our interests in common with those of the rest of the people.

2. THE EXTENSION OF THE REQUIREMENTS FOR LICENSE BY THE BOARD OF MEDICAL EXAMINERS

The construction of the word "competent" is entirely with the Board. The applicant for license to be "competent" should certainly be sufficiently instructed in the different branches of medicine as to make him a reasonably safe practitioner. Now, I hold that no physician, no matter how brilliant intellectually, nor how well educated in the theory, is a safe practitioner who has not had some clinical experience, at least in obstetrics and the practice of medicine. This being true, the Board would be justified in requring satisfactory evidence that this experience had been obtained. We all know how utterly inadequate the so-called clinical lectures to large classes are, and we should so set our standard as to secure, after a certain date in the future, genuine clinical instruction of real practical value. The nominal evidence of this instruction would have to be in the form of a certificate of attendance upon such teaching for whatever length of time the Board might think proper; but, in order that the evidence might not be merely nominal, it would be well for the Board to announce that if not all, some, at least, of the applicants, to be selected by lot, would be required to apply bandages and splints, and to diagnose and prescribe for disease in the living subject. A variety of chronic cases could, no doubt, be obtained from among the poor sick for a small consideration in any town large enough to accommodate the Society. On

the same line, it would be advisable in the examination on Materia Medica to require the identification of drugs—at any rate of those in every day use. This matter is of special importance to us, because, from the nature of our environment, an immense majority of our medical men are compelled to practice in the country—remote from help in emergency cases. No better practitioners can be found, in my opinion, than the best of our country doctors of years experience. Necessity has been the mother of invention with them, and, forced to rely upon themselves, they have thoroughly utilized that experience. But as to the number of sign-boards pointing to the Happy Hunting Grounds that mark the beginning of their professional journey, the result in most instances of the lack of just a little practical knowledge, it would perhaps be in good taste not to enquire. It is clearly the duty of the Board of Medical Examiners, who are officers of the State, to secure, as far as lies in their power, the protection of the people whose servants they are. These things being entirely within their jurisdiction, what I have said is intended, of course, merely as a suggestion. I will also take the further liberty of respectfully urging upon our new Board, which is now engaged in holding its first examinations, the great importance of keeping up the standard reached by their predecessors, and likewise the value of the written examination signed with a *nom de plume*, as insuring perfect fairness and impartiality, and rendering their position impregnable should complaint be made.

3. A SPIRIT OF PROFESSIONAL PRIDE ON THE PART OF THOSE NOW IN PRACTICE.

At the Raleigh meeting, in 1884, the following resolution was adopted :

Resolved, That, as members of the Medical Society of North Carolina, we pledge ourselves not to admit to our offices as students any persons who cannot satisfy us, by personal examination, that their preliminary education is sufficient to enable them to pursue the study of medicine.

This was a step in the right direction, and I wish to remind, not only the members of the Society of the pledge, but also to call to it the attention of all respectable physicians in the State who desire the welfare and progress of their profession, and ask them to join

with us in carrying it out. A pronounced public opinion is practically irresistible, and if we can succeed in getting this resolution accepted and emphasized by a large proportion of our medical men, we shall make a very decided advance. A strong development of this feeling of *esprit de corps* by adding to the honor and dignity of our profession, would give our opinions more weight with the people and help to build up among them a public opinion in support of our laws, thereby rendering their enforcement much easier and more certain. We must respect ourselves if we wish to obtain and keep the respect of our neighbors.

4. THE PATRONAGE OF HIGH GRADE PREPARATORY MEDICAL SCHOOLS.

I know of nothing that in my opinion would do more to insure a really good medical education than the devotion on the part of our young men of their initial year to work at a first-class preparatory school in which are thoroughly taught the fundamental branches, and they only. It is simply impossible for one to study to the best advantage with a physician in active practice, for the reason that if he is well informed himself he is nearly sure to have his time absorbed by his practice and the reading that he must do; and because, further, in the large majority of instances, no matter how able, he has neither the gift nor experience of teaching. Besides, the atmosphere of a doctor's office, with its manifold interruptions, is by no means conducive to study. The exigencies of his practice on the part of the preceptor render anything like regularity in lessons impossible, and the student forms, in the beginning of his career, loose, slip-shod habits of work, from which, perhaps, he never recovers. And so, instead of laying deep and broad the foundations of his professional life in this first year, he often worse than wastes it. Commencing study at the ordinary city medical school is still more unsatisfactory. In most of them the course is not graded and the medical infants and adolescents are fed on the same food. A great deal of it is beyond the digestive powers of the beginner, and it is no wonder that he has no stomach for it and turns to the distracting delights of the city, which, in many instances, he visits for the first time, and cares much more for the suppers with Bob Sawyer, Ben Allen and Jack Hopkins than for his studies. The genuine preparatory medical school,

situated at some institution of general learning with its studious atmosphere, is not saddled with any of these objections. And we are very fortunate in having two such schools in our State. The one established several years ago at Davidson College by our distinguished fellow-member, Dr. Barringer, and continued by his worthy successor, Dr. Monroe, is well and favorably known to you. Since our last meeting a second one has been established at the University by Dr. Richard H. Whitehead, and I feel that in this we have cause for congratulation, for, besides his phenomenal record at the University of Virginia, he is the son of his father, Dr. Marcellus Whitehead, of Salisbury, the devoted member of our Society, the learned and skilful physician, the noble-hearted man, the peerless gentleman, the brilliant and fascinating conversationalist, the genial, charming companion, the loyal friend, whom most of us remember with so much pride and affection. These two excellent schools are strictly preparatory, the fundamental branches only being taught, and they are, I feel sure, worthy of our cordial endorsement and active support.

While on this subject I feel it to be my duty, as your President, to call attention to the following extracts from the public prints. In the New York *Medical Record* of April 4th appears this item:

"A New Medical College in North Carolina.—At a meeting of a number of prominent physicians of North Carolina, held at Durham, in that State, upon March 18th, to consider the question of establishing a Medical College in connection with Trinity College, the preliminary arrangements were perfected, leading to the organization of a school of high standing, thorough equipment and three year's course."

The account of the meeting referred to, given by the Raleigh *Chronicle* of March 4th was, omitting names and non-essential matter, as follows:

"Trinity Medical Department—A School of Medicine Planned by Prominent State Medical Men—It is to be a Great School, not to be Surpassed by Anything of Its Kind in the South—The Plan Drawn.—A school of medicine in North Carolina at last! That is the good news we hear from a recent conference of medical men in Durham. * * * It was yet in the minds of medical men all over the State that Dr. ——— had at the last two meetings of the Medical Association introduced

and advocated a resolution to appoint a committee on the part of the Association to confer with a like committee from the Board of Trustees of the University with reference to the establishment of a Department of Medicine. It was remembered that this was voted down. Acting upon the belief that their hope in that direction was gone, this meeting in Durham was held with President Crowell of Trinity College, in order to see how such a department could be established at Trinity College in Durham. It was decided that a school be established, to be called the Medical Department of Trinity College. It is to have seven distinctive professorships, as follows: Anatomy, Physiology, Practice, Surgery, Materia Medica, Obstetrics and Chemistry.

"The school shall be first-class in every respect and have nothing but first-class instructors, laboratories, etc. A first-class Hospital shall be built in connection with it, and President Crowell was instructed to look after the possibility of raising the funds to build separate buildings. * * * These are the plans: We hope they will be carried out. Every year North Carolina gives $50,000 worth of patronage to other States, and she can then save it to herself. Such an institution could be made a great success, and we hope it will. If the Legislature arranges it so that a graduate of that school can be granted license on his diploma (as is done by other States), then most all of our young men will get their education here. Let the good work go on."

I have been informed by Dr. Bahnson, whose name has been associated with the enterprise, that he would not consent to even consider—should it be made to him—a proposition to join in the proposed school except upon the assurance that it was to be only preparatory. I have also read the editorial in the April JOURNAL saying that the reports as to the character of the school were "somewhat exaggerated"; but these statements are not authoritative enough to relieve me of the duty of at least bringing the matter before you. Still they do relieve the situation to a certain extent, so that what I shall have to say on the subject is based on a hypothesis. *If*, then, these reports represent at all correctly the intentions of the authorities of Trinity College, I cannot, as a faithful sentinel on the watch-tower, say, "All's well." On the contrary, I believe conscientiously that I would be derelict were I not to sound the alarm. At the New Berne meeting the Committee

to which was referred the resolution to take steps for the establishment of a Medical Department at the University of the State, made the following report: * * * "That in their opinion, there is no necessity for the addition of a Medical Department to the State University, and that, at present, the scheme is utterly impracticable. It is, furthermore, the opinion of the undersigned that neither the interest of the profession nor the public would be advanced by the establishment of such a department. In a word, that the interest of the profession and the public would be more enhanced by the support of a few good schools than by the establishment of many bad ones.

(Signed) "C. J. O'HAGAN,
"T. D. HAIGH,
"H. T. BAHNSON,
"J. GRAHAM."

Although much interested in the success and renown of the University, I thoroughly endorsed that report, and since that time I have been only the more confirmed in my opinion that it was eminently wise and is as applicable now as then.

It is so self-evident that location in a large city is a *sine qua non* to a first-class medical school granting diplomas, that I will not take up your time arguing the matter. North Carolina has no such city, and it therefore follows that the establishment of a school of such pretensions within our borders is to be deprecated.

The mere suggestion of applying to the Legislature for such a change in our medical law as to exempt the graduates of that, or any other medical school, from examination by the Board of Medical Examiners of the State, should fill us with apprehension. By the passage of such an amendment, practically, all that we have accomplished in the way of legislation for the advancement of the profession in the past thirty years would at one stroke be obliterated. Our dear old State, that, as far as results are concerned, was the pioneer in the movement to regulate the practice of medicine by law, by having the competency of those offering their services to her people passed upon by the *disinterested*, and *therefore* a surely impartial Board would lose her proud position in the very forefront of the line of medical progress and be relegated to the rear. Any movement looking to that end would probably meet with so strenuous and earnest an opposition on the part of the best friends of

real medical advancement as to insure its defeat; but the mere agitation of the subject before the Legislature would be fraught with danger. The laity neither understand nor appreciate, as they ought, the value to them, as well as ourselves, of our license law; the talk of keeping money in the State is weighty with the average legislator; the school would have its special friends, and there would surely be a number who, for one cause or another, would be against all restrictions on the practice of medicine; and the danger of the passage of the amendment, or a repeal of the whole statute, let me assure you, fellow-members, would not be an imaginary one.

I do not believe that the gentlemen whose names have been associated with the undertaking would knowingly do aught to injure the profession. Nor can the Society claim the right to prescribe the character of the enterprise its members may undertake, provided they are ethical; still, there can certainly be no question as to the propriety and advisability of an expression of opinion on anything likely to place in jeopardy the valuable results of years of effort on its part And just at this juncture, it would not only be proper, but wise (it certainly can do no harm, and it might do good), for the Society, in a suitably framed resolution, to emphatically pronounce against the establishment in our State of anything in the way of a medical school more pretentious than a purely and exclusively preparatory one, embracing in its curriculum the fundamental branches of anatomy, physiology, materia medica and chemistry, with the sciences collateral to medicine. A school of this character at Trinity would of course be as unobjectionable as those now in existence. In the resolution suggested it would also be well to incorporate a formal expression of opinion as to the minimum facilities of instruction and requirements for graduation on the part of the colleges that would receive the endorsement and support of the Society.

THE PROPOSED AMENDMENT TO THE CONSTITUTION ABOLISHING THE NOMINATING COMMITTEE.

The subject of most importance to the Society, as an organization, to come up at this session, is the resolution introduced by Dr. J. W. McNeill, at the last meeting, to amend the Constitution by abolishing the Nominating Committee and having all officers of the Society elected by ballot. As I am able to say with perfect sin-

cerity that I would be glad to be relieved of the responsibility of appointing a Nominating Committee, and as my position in regard to the proposed change has been declared in a former meeting, I feel the less embarrassment in performing the duty of expressing to you, as forcibly as I can, the reasons upon which is based my belief that the pending amendment is calculated to greatly injure the Society. The reasons for its adoption, so far as I understand them, are, (1) that, under the present arrangement, the President has practically the power of naming the officers of the Society; and (2) the desire, so characteristic of the American citizen, to take a hand in everything that is going on. As to the first, I am confident that it has been very rarely, if ever, consciously exercised; and, saving, of course, the present incumbent, I am quite sure that the selections of the Nominating Committees have been, for the most part, eminently judicious and satisfactory. In regard to the second, it ought to be enough to say that science and politics are incompatibles. Most of us are filled with party spirit, and, in the event of the adoption of the amendment, it would not be long before the Society was split into two or more actively hostile factions. So fascinating are these partisan contests to many, that everything else would be subordinated to them, and from this would arise the principal objection to the election of officers by ballot, namely, the consumption of too much time. When it is remembered that we are already required by law, or custom, to elect every year either members of the Board of Health or of the Board of Medical Examiners, the force of this objection will be more apparent. In addition to the serious interference with the proper business of our meetings the caucusing, log-rolling and electioneering generally, inseparable from most elections, must be carefully borne in mind. We should be thoroughly satisfied as to the reality of the grievance and our inability to correct it by less objectionable means before we consent to allowing further scope for the exercise of these instrumentalities so pregnant with the elements of discord. Under their baneful influence our Society, of which we are so justly proud, instead of remaining, as in the past, the nursery of everything looking to the elevation of the profession and the good of the people in all matters relating to health, would almost surely degenerate into an organization chiefly political. The kindly good-fellowship that has hitherto marked our meetings would give place

to the bickerings, envyings and strife that are inherent in politics. At the same time I feel that if a majority, or even a respectable minority, are dissatisfied with our present method of selecting our officers, their dissatisfaction ought to be removed if it can be done without incurring the objections mentioned. To that end, therefore, as fulfilling both conditions, I would respectfully suggest a plan brought forward by me at the Durham meeting (and once or twice before essentially I have since learned), not that I favored it more than the present one, for I voted against it myself, but merely to allow an expression of opinion in order to quiet certain murmurs of discontent that could then be heard. It is this: Retain the Nominating Committee, but have it consist of nine, instead of five, members. Let the members of the Society from each of the nine Congressional Districts, meet, say, immediately after the oration, or essay, on Wednesday night, or at some other definite time, and select one of their number to serve on the Committee, and require the full Committee, thus elected, to meet on Thursday morning at 9 o'clock, to insure promptness. To anticipate the objection that such a substitute as the above would, under the Constitution, have to lie over a year unless unanimously adopted, and could not go into operation at this meeting, as the amendment would, I will say that if it should be adopted it would give me much pleasure to select from the nine five by lot and appoint them as the Nominating Committee. At the next meeting it could be regularly adopted and the full Committee act. It seems to me that some such arrangement as this ought to satisfy all parties, and, at the same time, save us from making what the experience of many similar bodies, as well as of our own Society many years ago, I am told, has proved to be a serious blunder.

Before leaving the subject of the Nominating Committee I wish, in case it should be continued, to call your attention to the resolution adopted at New Berne enjoining secrecy on its members, as it seems, on certain occasions since, to have been overlooked. The wisdom of the resolution suggested by President Graham few, I am sure, will question.

CONSTITUTION AND BY-LAWS.

Our business machinery, with its numerous sections, seems rather elaborate and cumbersome for a body of our size, but as it appears

to have brought out more papers than any former plan, perhaps a change might not be for the better. But our Constitution and By-Laws are in a lamentable state of confusion, and contain, besides, many dead or dying branches that could be lopped off to advantage both to perspicuity and consistency—for example, "The Committee of Scientific Inquiry," which might be denominated a rotten branch without doing the slightest violence to truth. This condition of things should be suffered to exist no longer than is absolutely necessary. I would, therefore, respectfully suggest that a committee of three be appointed with instructions to codify our laws to date, and having done so and ascertained what the laws are, to suggest a compact and shapely substitute for the whole, if, in their judgment, they think it advisable. The codified laws and the proposed substitute should be published in the January number of the JOURNAL, which, as you know, is the official organ of the Society. In this way the members would have plenty of time to consider the subject carefully and be prepared to suggest further amendments, either in the ensuing issues of the JOURNAL, prior to the meeting, or at the meeting itself. "In the multitude of counsellors there is wisdom," and by this method the aid of many minds could be obtained. Since it would be necessary, in order to obtain a first-class committee, to select men who are already very busy, and as the amount of work put upon them would be very considerable, I would recommend the appropriation of a reasonable sum for clerical help.

THE NORTH CAROLINA MEDICAL JOURNAL.

As has just been said, the NORTH CAROLINA MEDICAL JOURNAL is the official organ of our Society. It has been the means of doing more for the advancement of everything pertaining to the progress and elevation of the profession in our State than any one single instrumentality known to me. It is therefore deserving of our grateful and cordial support, and we should look upon it as a pleasant duty to render that support, not only in the form of subscriptions, but in contributions to its pages. It is our proud boast that the average knowledge and attainments of our North Carolina profession is fully equal to that of the medical men of any other State in the Union, and yet what evidence do we give of it to out-

siders. We hide our light under a bushel, when we should let it shine before the medical world. It is true that the bushel is tilted at our annual meetings and some rays find their way out through the papers read on those occasions, but after they are absorbed we remain for the most part either in darkness or a deep twilight, so far as any illumination from our pens is concerned. It is a shame to us that this is true, and we should not be content to continue longer under such a reproach. For this reason—that we write so little for our home-paper—and for the further reason that volumes of transactions are not much read, I think the demand of some for an early publication of the transactions in full probably unwise, and certainly ungenerous. We surely cannot suffer a loss of dignity in following in this matter the practice of such societies as the American Medical and the British Medical Associations. We have upon our roll the names of many talented, accomplished and ambitious men, especially among our younger members, and I trust they will come to the front and remove all occasion for complaint on this line.

CONFEDERATE RECORDS.

The committee to collect statistics concerning Confederate veterans, appointed at the last meeting, has been industriously at work and has made decided progress. Blanks have been prepared for general distribution and you will be supplied during the session, and I earnestly hope that each ex-Confederate medical officer into whose hands they may come will not only fill in for himself, but likewise for any of his friends and neighbors with whose history he may be familiar, and mail promptly to Dr. Thomas F. Wood at Wilmington. It is of the greatest importance for the honor of the profession and for the sake of history, that these records be made up before the parties most in interest pass from the scene.

MEMBERSHIP IN THE SOCIETY.

In accordance with our By-Laws a number of our members are dropped every year for non-payment of dues. Most, if not all, of these are good men and true. Their friendly support of the Society and its efforts for the improvement of the profession is greatly to be desired Every worthy medical man in the State should, if possible, be enrolled as a member of the Medical Society of the

State. So, in order to keep these members who are delinquents not from any unworthy motive, but most likely from carelessness or forgetfulness, with us, and at the same time not to permit them to eat at precisely the same table with those who do their full duty, it has been suggested that we follow the example of the American Public Health Association and certain other societies, and simply withhold the Transactions until their dues are paid. I cordially endorse the suggestion and commend it to you for adoption. In addition I would further recommend that those who have been dropped from the roll during the last two years be reinstated forthwith; and all others losing their membership by non-payment of dues before that time who remain sufficiently interested in the Society to do so on application. I think it would also be well to re-admit into full fellowship pecuniary delinquents of more than two years standing on payment of the amount of the initiation fee.

OUR RELATIONS TO THE BOARD OF HEALTH.

I cannot close without directing attention to the less than half-hearted support our health laws receive from the members of the profession, all of whom are *ipso facto* members of the County Boards of Health. In many instances they seem to show no disposition to do their duty, even in the matter of reporting to the County Superintendents cases of contagious disease. Whether this arises from an honest disbelief in the value of sanitary precautions, from laziness, from jealousy of the Superintendent, or what not, it is a clear neglect of duty for which we should blush. And unfortunately it is a delinquency that may in some instances result in a widespread epidemic of deadly disease. Let us try to do better in this particular and render our health authorities a more cordial and efficient support. The greatest of all recent advances in our business of saving life and preserving health is to be found in the development of the present methods of preventing disease, and not to be abreast of this movement would show an indifference to the cause of humanity unworthy of us. We should not rest easy until all grounds for complaint are removed.

CONCLUSION.

During the year that has elapsed since assuming the responsibilities of the presidency I have, as occasion arose, conscientiously

striven, to the best of my ability, to preserve and to advance the honor and the interests of the Society and of the profession in the State. The duties of a presiding officer are usually neither light nor easy, and, in common with all mankind, I am liable to make mistakes; but I trust that my association with you for the past fourteen years will suffice to justify the belief on your part that such errors as I may commit spring from defective judgment, and not from ill-will or partiality. It shall be my earnest endeavor to be just and courteous to all and to rule with fairness and kindly firmness, with an eye single to the best interests of the Society, and with your help to make our Thirty-eighth Annual Session mark a distinct advance in the career of the Medical Society of the State of North Carolina.

Finally, gentlemen, I desire to again express to you my sincere appreciation of your partiality in conferring upon me the highest honor within your gift, and to add the hope that I may not prove unworthy of your confidence.

THE PRESENT STATUS OF PULMONARY TUBERCULOSIS.

By Karl von Ruck, B.S., M.D., Director Winyah Sanitarium for Diseases of the Lungs and Throat, Member Climatological Association, American Public Health Association, American Medical Association, etc., etc., Asheville, N. C.

(Read before the Medical Society of North Carolina, at Asheville, May 26th, 1891.)

It is not my intention to present in this paper an exhaustive review of all the well-known and established facts and theories on the subject of Pulmonary Tuberculosis, but rather to deal with questions which within the last decade have more particularly occupied the attention of the profession, and in doing so I at once refer to the revival of interest created by the discovery of the bacillus of tuberculosis by Professor Robert Koch in 1882, from which time, it may be said, dates the new era in the history of the disease under consideration.

Although the discovery was assailed by various observers, as is the case with every new and important announcement in science, the position which the scientific world assumed toward it was unique in its prompt and universal acceptance, without subsequent addition or deduction of the facts stated by the discoverer, and no necessity exists for the adduction of any proof, on my part, as to its correctness.

Still, the etiology of tuberculosis is not entirely contained in the word "bacillus," and clinical observers have since successfully shown that, while the causative relation between the infecting micro-organism and the disease is undoubtedly true, another and equally important factor enters into, and is necessary for, the production of the disease.

This factor is the acquired or hereditary predisposition on the part of the infected organism, and no amount of theoretical reasoning or laboratory evidence has eliminated this clinical experience. The seed must find a proper soil for germination, growth and further development.

Much has been written to show wherein this peculiar predisposi-

tion really consists, but it would lead me too far to enter into the various views of different authors, neither is it necessary for its proper elucidation and understanding.

It is not peculiar to tuberculosis, but finds application with most, if not all, infectious diseases. Experience has shown that the offspring shows peculiar resemblance, not only in physiognomy, but also in constitution, physical development, temperament and mental aptitude to the parent, and not only is this true of the human family, but it finds equal, and sometimes even more striking, exemplification in the animal.

We know also that in certain families a greater tendency to the acquirement of certain diseases exists than in others: parents of weak constitution and deficient physical development, as a rule, beget children lacking in a similar way, and it is not only the tubercular, but other constitutional impairments, which are transmitted and the offspring falls a more ready victim to causes which in one more vigorous would have been inoperative. Such impairment may, of course, also be acquired, and the offspring suffer on that account in the same manner.

In the predisposition to tuberculosis a faulty development of the chest, a small heart, a vulnerable digestive apparatus, previous disease of the air-passages, other severe and exhausting disease not yet recovered from, anæmia, and unhygienic habitation and surroundings, all tend to deficient cell-nutrition and consequent lowering of the resisting power against the invasion of pathogenic micro-organisms.

The study of heredity and acquired immunity from certain diseases has been of interest ever since Jenner's time, and the experimental investigations, especially of Metchnikoff and Buchner, have led us far toward a final solution of the causes, which, of course, explain at the same time the opposite subject of predisposition.

Metchnikoff demonstrated that the mobile cells, the leucocytes and also certain fixed tissue cells have the power of taking up within their cell wall and of digesting and destroying disease germs, he demonstrated this to occur also with the bacillus of tuberculosis, showing the prompt migration of leucocytes to the point of infection, or wherever any irritation or injury has occurred to the living tissue. If the leucocytes are in sufficient number, and their vitality is such as to enable them to manifest the highest degree of activity,

the intruding germs are promptly surrounded, taken up and eliminated. Therefore an organism whose migratory cells are deficient in number or in a state of low vitality through hereditary, acquired, permanent or temporarily induced defective nutrition, presents a favorable battle ground for the infecting germs and a predisposition to their growth and extension.

H. Buchner, on the other hand, has conclusively shown that not only the living cells of the organism have the power to destroy and eliminate pathogenic germs, but that, under certain conditions, the blood serum too has the power to kill them, at least the serum from certain animals destroys certain disease germs in a certain time, and the serum from an animal, which before protective vaccination was inoperative, had subsequently the power to kill the germs of the disease, against which the protective inoculation was made.

These highly interesting facts, as before stated, give us a more perfect understanding of the questions of predisposition, which remain not only an important factor in the etiology of tuberculosis, but form the keystone to all our therapeutic efforts in that disease.

Important changes in our views upon the pathology of tuberculosis have also followed the discovery of the tubercle bacillus. In the first place, we have learned to differentiate the tubercular from all other affections, and no bacillus, no tuberculosis remains an unimpeachable dictum.

The tubercle is always the result, or product, of the engrafted germ, requiring for its development in the animal from two to three weeks after infection. Once formed, we have the stage of infiltration, which usually obtains without marked symptoms, and constitutes in the pulmonary affections the first stage of the disease.

Formerly authorities agreed that caseation was the only change the tubercle could undergo, but more recently it has been maintained that it can be absorbed without first having undergone such degenerative process. Caseation is, however, the usual change, and occurs rapidly, as a rule, in the course of a month or six weeks, during which the surrounding tissues are acted upon by a chemical irritant, probably produced by the germs in effecting the degenerative process. A vascular zone now surrounds the tubercle and inflammatory changes, more or less marked, occur upon the peripheral tissue. According to the extent of the tubercular lesion, the amount of inflammatory action engendered, and the amount of absorption of

noxious substances, we have more or less pronounced general and local symptoms belonging to the now present second stage. At the end of this period a more or less temporary quiescence of the process occurs, the inflammatory action subsides, the newly formed connective tissue cicatrizes, and in favorable cases a permanent arrestment of the disease, by pressure-atrophy and absorption of the degenerated tubercle, may take place. It is not yet known what becomes of the bacilli, which can maintain their vitality outside of the body six months, or even longer: whether by their own products they are destroyed or undergo degenerating changes for want of nutritive pabulum and are absorbed in the course of time, is still a matter of conjecture. Exceptionally the process of the second stage continues unabated, the inflammation leads to softening of the cheesy foci and to destructive suppuration of the tissues with formation of cavity. If permanent arrestment does not follow, the usual period of quiescence after caseation is disturbed by intercurrent conditions which affect the nutrition of the part adversely, reëstablishing the subsided inflammation and constituting a relapse. Such relapses may repeat themselves, each time with more or less extension, by continuity of either the inflammatory or the tubercular process, or both, until finally a permanent arrestment is arrived at, or softening, suppuration and excavation have taken place, these latter constituting the third stage of the disease. (Many such relapses have come to my notice within the last eighteen months, having been induced by epidemic influenza.) Even in the stage of excavation a relative recovery may still occur, according to its size and location and the facility for drainage into a bronchus, but also according to the concomitant condition of the patient and his management, the cavity either continues inflamed, suppurating and extending, frequently leading to the occurrence of pulmonary hæmorrhage, or it may heal by the formation of granulation-tissue and subsequent cicatrization, or when large it may become dry and lined with smooth walls after all tubercular tissue has been discharged.

In the advancing disease extension of the tubercular process occurs:

1st. By continuity before a protecting wall of connective or cicatricial tissue has enclosed the lesion.

2d. By auto-infection through the blood and lymph channels,

during the period of softening or detachment of bacilli from the interior of vessels, or by the continued infection from a tubercular focus outside the lungs to which the pulmonary disease is secondary.

3d. By the gravitation and lodgment of bacilli containing secretions within the lungs, and—

4th. By re-infection through inhalation.

These extensions and their subsequent pathological changes produce a variety of symptoms and complications from the slightest to those belonging to general miliary tuberculosis, and their detailed description would extend this paper far beyond its limit.

In referring to the prognosis I may say that a more hopeful view pervades the profession at the present time, perhaps on account of possible specific medication. The prognosis heretofore, especially in the earlier stages, has, however, not been so bad as the public, and perhaps even some of the profession, believed, and I point only to my own results which have been heretofore obtained without specific medication.

In 515 cases reported by me in the *Medical News* of May 13th, 1890, we have 124 recovered and permanently arrested cases—certainly an encouraging number, especially when we consider that in many cases the treatment was prematurely interrupted by the patients who returned to their homes, and that these cases were in all stages of the disease and by no means selected; and it is my opinion that, while we may have a specific for tubercular tissues, none will ever be found which will have the power to also remove the constitutional impairment which we call predisposition, or one which can repair the destructive processes attending the more advanced stages. Apart from specific medication the prognosis is influenced by many other factors, which my article in the *Medical News* considers in detail. I have there shown the influence of age, sex, heredity, the stage of the disease, the condition of the digestive organs, of fever, cough and expectoration, of the heart action, of concomitant disease of the upper air passages, pulmonary hæmorrhage, pleurisy and other complications, and to which I must refer any of my hearers who are more particularly interested.

A great step in diagnosis was made by the discovery of the bacillus of tuberculosis to which I have already referred in speaking of the etiology, and their demonstration in the sputum makes the diagnosis absolute. There are, however, cases in which we can

either obtain no expectoration for examination, or the bacilli may be absent for considerable periods and the process be of a tubercular character nevertheless.

In such, when the general and physical examination leaves us uncertain, and we desire to exclude the theory of tuberculosis, we have now in tuberculin an additional diagnostic reagent of the greatest value, so that it must be exceptional indeed for the competent and painstaking physician to remain in doubt as to its existence.

I desire, however, to say a word of warning against the unnecessary employment of tuberculin as a diagnostic agent, which may be fraught with danger to the subject of such an experiment, if he should prove to be tubercular, and I have purposely mentioned it as a means to exclude, rather than to confirm, the tubercular character of a disease, because the doses required for a typical reaction are so large that they are liable to produce an unfavorable effect upon the local tubercular process.

The treatment in view of the recent discovery of tuberculin, which has an undoubted specific effect upon all tubercular tissue, has been and still is, the topic of thought with the entire profession, and has elicited the keenest interest from all mankind.

Without desiring to detract in the least from its value and importance, I shall speak of it later, and mention in the first place the most important of all means for the successful treatment of pulmonary tuberculosis, which is, and ever will be,

"NUTRITION."

By it we do not merely understand the feeding of our patients, but include each and every means at our command which can aid us, directly or indirectly, in strengthening the organism and in supplying it with increased resisting power against the advance of the disease. To check the advance of the disease we must eradicate the predisposition by increased blood-making processes and improved cell nutrition, and preëminently among the means at our command stands

CLIMATE.

Climatic treatment has stood the test for utility from the remotest time, and its rational employment deserves the consideration of

every physician who takes the responsibility of advising consumptive patients. Indeed, the time must come when governments will be forced to afford this advantage to those of the poorer classes, who are predisposed to, or are already the unfortunate victims of pulmonary tuberculosis.

The saving and restoring to usefulness of the many lives lost without this advantage, apart from the dictates of humanity, would not only justify the necessary expenditures, but would leave the State decidedly the gainer.

It would make my paper too long to enter into the merits of the different climatic resorts, and the profession of North Carolina need know no other, and can know no better, than that of the beautiful Asheville Plateau in their own State, with its moderate temperature, medium elevation, dry and pure atmosphere, and almost continuous sunshine, where thousands of sufferers from all parts of the Union have been restored, and which is held second to none in the estimation of the profession of our country. Indeed, I found upon my recent trip to Europe, and note frequently in foreign medical literature, that the profession there is by no means ignorant of its great merits.

When I mention such a climate as a means for nutrition, I do so in the appreciation of it as a tonic, as Nature's greatest tonic, to which we may add good water and good food, all of which Asheville affords in the greatest of abundance, and beyond which, I may almost say, there are no tonics, at least none that could be mentioned in comparison.

The climatic treatment to produce the best results requires, however, the competent supervision of the physician at the climatic resort. I say this with some hesitancy, for fear of being misunderstood in the motive which prompts the utterance, but my experience has shown it to be true, and other and more competent observers who are not practicing at climatic resorts have emphasized this in the strongest language.

Patients who are set adrift on their arrival at climatic resorts rarely consult a physician unless when experiencing some relapse in their condition, and with its subsidence the professional supervision again ceases.

These relapses are, as a rule, due to preventible causes, and depend most frequently upon physical and mental over-exertion, errors in

diet, inattention to proper dress, body-hygiene, etc., and in many really curable cases, we get only indifferent results, or they grow worse, in spite of the best climate, by their inattention to the many details in their daily life and conduct.

Out-of-door life must ever be a separate consideration from physical exercise, be that walking, carriage or horse-back riding, or other light employment, of these only that much can be allowed with safety which in the individual case does not produce heart-fatigue. The inhalation of dust and smoke and exposure to strong winds are ever seriously injurious to the consumptive patient, and he must be so circumstanced that he can be out of doors and avoid these injuries.

If a patient is in a state of active disease he requires the management essential for it and the attending fever, and the earlier and prompter our measures are taken under such conditions the less damage will result.

The way to the consumptive's grave is paved with relapses, and their prevention is one of the secrets in the accomplishing of a cure.

No one, who has not been intimately and constantly associated with consumptive patients, can ever fully appreciate how little it takes to arrest the favorable progress of the disease.

Apart from climatic influences and the benefits derived from a constant oversight and proper management of the patient, there are other means, which are useful at the climatic resorts as well as at the patient's home, and which we cannot afford to dispense with, if the best results are to be obtained.

In so serious an affection as pulmonary tuberculosis all our resources are none too many, and the best is never too good.

For the best nutrition we require perfect digestion and assimilation and gastric and intestinal disturbances of any sort must, in the first place, be prevented by proper diet, but if present should have our earnest attention.

Proper care of the skin in the employment of hydropathic applications is essential in health, and more so in a disease where the skin is frequently called upon for vicarious functions.

When physical exercise is greatly limited, or the patient is confined to bed, we cannot afford to do without a certain amount of massage, the rubbing and kneading of the muscles aid in maintain-

ing a good circulation and so favor cell nutrition and elimination of waste products. Electricity may at times find application under such circumstances for the same purposes.

It is not only essential to secure the favorable climate and its pure, dust-free air, but also to provide for free and unobstructed nasal respiration, to which end any obstructive disease of the nasal passages must be removed by proper treatment.

All these and many more subjects must have unremitting attention for the purpose of securing the best nutritive processes, and thereby the eradication of the predisposition and the increase of the resisting power of the tissue cells.

In laryngeal complications, especially when of a tubercular character, proper local treatment is unconditionally required, climate alone will not often arrest them.

For certain indications and in the absence of counter-indications we have in the pneumatic treatment, with perhaps combined inhalations, a means of considerable importance; indeed, some indications cannot be complied with by any other means. While in the past its routine employment has brought some discredit to the method, this is no good reason to prevent its rational use guided by judgment and experience.

We can by this method favor and increase the pulmonary and also the general circulation, thus tending to a better nutrition of the affected lung; we can increase the vital capacity by recovering collapsed air cells and lobules before atrophy and obliteration have occurred; we can favor the expectoration of accumulated secretions, and diminish it by combined inhalations of medicated sprays and vapors, thereby also acting upon the bronchial catarrh locally and most favorably; we can strengthen the respiratory muscles and increase the frequently deficient expiratory force.

As counter-indications we have to bear in mind all active inflammatory processes within the chest.

As a remedy tending towards specific medication even before the discovery of the specific cause, I may mention in particular,

CREASOTE.

In my experience it has done some good apparently as a corrigent in certain digestive complications; I never saw any real or lasting good from large doses which, as a rule, had to be given up on account of injury to the stomach.

Within the last eighteen months I have employed it hypodermically, reaching as much as 2 grammes per day, and I am inclined to the belief that I have seen some benefit from its use. The injections are, however, somewhat painful, and few patients are willing to continue them from one to three times daily for a considerable period of time. So administered it also promptly lowers the temperature several degrees if fever is present. Close watch of its effects upon the kidneys is necessary, especially after a gramme or more per day is given.

The specific medication of greatest interest at this time, however, is the remedy of Professor Koch, now called Tuberculin. Its discovery had in its following several other specific modes of treatment, notably the hypodermic use of cantharidin, with which I have experience only in a single case, the improvement of this patient since its employment is most gratifying, and inclines me to a more extended trial.

Although obliged to Dr. Shurly for the early receipt of his remedies in the form of iodine and chloride of gold, we have as yet had no patient who desired their application.

With the tuberculin I have had over five month's experience in its continued application upon upward of 40 patients.

I have, however, from the beginning, departed from the method of application as witnessed by me in Berlin, by giving it in smaller beginning doses and with slower increase, whereby I hoped to avoid the so-called general reactions and their attending dangers, and believe that I have been the first one in this or any other country who has called the attention of the profession to the now conceded fact that the doses which produce such an effect are not only not necessary for apparently good results, but are positively injurious.

With a few exceptions in my early experience I have been able to so administer the remedy as to avoid all unfavorable complications, and, indeed, without material discomfort to my patients. But in the cases where accidentally general and febrile reactions followed its use, a loss of flesh up to several pounds has almost invariably resulted.

I believe that my experience has demonstrated that, under certain and well defined precautions, the remedy can be applied to the avoidance of all danger—a fact of the utmost importance in the experimental stage of any new remedy.

In a paper read in the Section of Practice and Physiology of the American Medical Association, a few weeks ago, I communicated my results in 25 cases treated for a sufficient length of time to justify at least general conclusions.

I quote from that paper as follows:

"The 25 cases of pulmonary tuberculosis treated with Koch's remedy are, for convenience, divided into three classes, according to the degree of the local disease, and more particularly the degree of the general health and vigor of the patient.

Class A comprises 5 cases with one or both upper lobes involved, but without destructive change, the general health being still comparatively good. Of these are—

Apparently recovered	3.
Greatly improved	1.
Improved	1.

The greatly improved case had been under treatment only a little over a month, and all symptoms have since subsided

The case reported as "Improved" left the institution after three week's treatment to pursue it elsewhere, and her prospects seemed very good indeed.

All these patients gained in weight from two to twenty-seven pounds, an average of over nine pounds each.

Class B comprises 7 cases with more extensive disease or moderate destructive processes, which were still in a fair physical condition. Of these are—

Apparently recovered	4.
Greatly improved	2.
Improved	1.

All of these cases bid fair to continue in their improvement, and in most of the unfinished cases arrestment of their disease seems quite probable to follow further efforts.

Six of these gained in flesh from two to twenty-three pounds, with an average of nine pounds each, there being no change in weight in one case.

Class C comprises thirteen cases far advanced in local disease, with considerable constitutional impairment, but still in a condition

that there were reasonable hopes for improvement. Of these are—

Greatly improved	4.
Improved	6.
Slightly improved	1.
Not improved	2.

The cases "Not improved" and the "Slightly improved" case have been put upon other methods of treatment, after what I considered a fair trial of the Koch method, the slightly improved case has made good progress since, and is the one now upon the treatment with cantharidin.

Nine of these patients gained from one to twelve and one-half pounds, an average of six pounds each.

Three cases neither lost nor gained, another lost nine pounds and regained four pounds, being deficient five pounds, but is now gaining. Among these cases are six who suffered also from tubercular laryngitis, three of which presented moderate circumscribed infiltration, two have entirely recovered in the sense that the larynx appears normal, the voice is good, there are no subjective symptoms, and no further local reactions occur to comparatively large doses of the lymph.

Another case is rapidly improving.

The remaining three cases all far advanced, both in the pulmonary and laryngeal disease, are those in which the method was discontinued, no material improvement having been obtained."

These results must be considered as highly satisfactory, and since that paper was prepared the improvement in the reported, as well as in more recent cases not included in my report, has been equally good.

It is of course impossible for me to say how, or if, these results would have been changed had the Koch remedy been omitted, or how much of a share is attributable to it, but I feel justified in stating that it is my impression they were more prompt and uniform, and, on the whole, better, than I have heretofore been able to obtain under the same climatic conditions and general management.

A number of cases under treatment at the same time in my institution, which did not receive the new remedy, have not done so well.

I find it rather difficult to administer the remedy to the avoidance of general and febrile reactions, and at the same time to gradually increase the doses. If the doses really need to be increased, as seems probable, and as I have done, the treatment involves an amount of supervision and professional attention which must seriously limit the use of the tuberculin in private practice. There is no fixed time when the local reactions occur, and while, as a rule, we find them in from six to ten hours, they may occur sooner or later, and last from so short a time as half an hour to twenty-four, or even forty-eight hours.

No repetition of dose or increase in quantity is permissible when a reaction has occurred, or while it continues. Any undue continuance is an indication that the next dose must again be taken smaller in amount, and it has become my rule never to increase a dose until the last two doses, of the same quantity, shall have been apparently inoperative, since I have found that the effect of a subsequent dose of a like quantity may exceed that of the preceding dose. To proceed under such precautions intelligently the physical examinations of the patient have to be very frequent indeed, and he has to be seen every few hours after an injection until the local reaction has passed off. I have been obliged to make a number of examinations of the chest in a patient upon the same day to demonstrate a local effect.

In comparing my results with those of others who have also used the remedy, it must not be forgotten that I employed the remedy to the avoidance of general reactions, that the patients were all in a special institution and under such constant and painstaking observation that the occurrence of a general reaction could not well have escaped me. Further, that it has been conceded by those who have most experience with the remedy that these general reactions are not only not necessary, but are frequently seriously injurious, and that the reports from Germany, where, since about the early part of March, the dosage has become much more conservative, are growing much better.

On the other hand, we would expect better results under its employment in a special institution, in connection with climate with every advantage that could be brought to bear upon the favorable progress of the individual case, conditions which Professor Koch himself recommended as most desirable for the best results. Fur-

ther, it should be remembered that more than half of my cases were far advanced in disease, and that even in these remarkable and continuous improvement in all but three has resulted, and entire arrestment is now manifest in several of these advanced patients, having continued so for over two months, all being cases in which we were first told the remedy would be dangerous and harmful.

Neither should the remedy be doubted because under a wrong method of administration some physicians or institutions have of late been said to have reported adversely and to have given it up as too dangerous or harmful.

The wonder to me is that they required so long a time for this conclusion, not only in America, but also in the country of its introduction.

As to the action of the remedy upon tubercular tissue, I can confirm the recorded observations of other experimenters, that it produces other narcotic changes *only*, when given to the production of the symptoms which are so well known as "general and febrile reactions."

In my method, by which these symptoms are avoided, this does not occur. I rather believe that the effect of the tuberculin is, then, one of irritation to the periphery of the tubercular lesion, by which an increased amount of blood, and consequently a better nutrition of the fixed tissue cells and wandering cells is induced, the latter being the so-called phagocytes of Metchnikoff, which, on account of the specific irritation, reach its seat in greater numbers, all tending to the destruction and the checking of the advance of the bacilli upon the periphery, and also favoring the formation of connective tissue and the transformation of giant and epithelioid cells into the latter, which, by its subsequent contraction and shrinking, encapsules and causes pressure-atrophy and absorption of the tubercle, and so constitutes a physiological cure. On the other hand, from larger and rapidly increased doses the irritation becomes excessive, inflammation, suppuration and necrosis of the peripheral tissue as well as of the tubercle is produced, and the accompanying symptoms of a general and febrile reaction take place, identical with the symptoms which occur, when we have softening and necrotic processes in the ordinary course of the disease, which we have always and properly endeavored to avoid.

Much time will be required to arrive at a final and correct appre-

ciation of the value of the remedy and of the mode in which its curative effect is brought about. Dr. Loomis, of New York, told me recently that he is just beginning to learn how to use it, and that since he has adopted a more conservative method of dosage his results are growing much more satisfactory. I am at least certain that it is possible for the remedy to be given in increasing doses up to 120 milligrammes, as I have done, without injury and even without material discomfort to the patients, and, although I cannot absolutely demonstrate that it has, or how much it has aided me in my results, I hope and have much confidence that, with growing experience, we will find the tuberculin a most valuable aid in the treatment of this disease, and that Professor Koch has, in this instance, also sustained his reputation heretofore won, namely, that no scientific announcement he ever made has been subsequently disproven In the meanwhile, I believe it to be an important step toward its clinical understanding to have demonstrated a mode of administration which has at least the advantage of doing no harm, and under which we find the patients steadily improving, even those in the far advanced stage.

From private advices I am also justified in stating that a radical improvement in the tuberculin by the removal from it of certain noxious principles may be looked for in the near future.

Finally, I desire to say a word on the subject of Prophylaxis, which is, after all, still the true remedy by which we must endeavor to restrict and overcome this scourge which infects the civilized world. Besides wise legislation, which the profession should strive to bring about, we can do much in educating the directly interested patients, their friends and attendants in its prevention. On our part an early diagnosis, if possible, even before expectoration has occurred, is absolutely essential, and there should be no license to practice granted to any physician who is not fully competent to diagnose the disease in its early stages.

If, then, we earnestly see to the proper disposition of the bacilli-containing secretions, so that the germs will be destroyed and prevented from infecting predisposed subjects, if we will give proper attention to the candidates for consumption—the subjects of a predisposition—and endeavor to eradicate their tendency to the disease by the increasing of their nutrition and resisting powers through the employment of climate and other means at our command, then, and then only, will we, concerning this disease, have fulfilled our duty and complied with our mission as true physicians and as guardians of the public health.

May the profession of North Carolina always stand first and foremost in the recognition of the old but true saying, which applies in pulmonary tuberculosis, if anywhere, that

"*Prevention is better than cure.*"

THORACIC SURGERY.

By H. Longstreet Taylor, A.M., M.D., Asheville, N. C.

(Read before the Medical Society of North Carolina, at Asheville, May 26th, 1891.)

The surgical treatment of suppurating cavities within the lung itself promises to become a recognized surgical procedure. For some time large abscesses have been incised and drained, especially when a history of a foreign body having entered the air-passages has preceded the formation of the cavity. In England a tooth was thus removed from a large abscess and the patient recovered. Recently a case was reported to the St. Petersburg Medical Society of the successful treatment by scraping and packing of an actinomycotic abscess, situated in the lung. Sonenberg's work in Berlin on tubercular cavities is the latest departure and his ultimate conclusions will be of great value.

Empyema is a surgical disease. It may be on this account that physicians so often fail to make the proper diagnosis. Just as the abdominal surgeons have been teaching the profession to recognize the symptoms of pus in the pelvis, and have by bold operations saved thousands of lives, just so must the thoracic surgeon teach the profession to recognize the symptoms of pus in the thorax, and must be prepared to follow up his diagnosis by locating and evacuating the pus.

For some reason the presence of pus in the thorax is overlooked in a great number of cases. The small needle of the hypodermic syringe is a fruitful source of error, for when it is thrust in and nothing is found, it is too often accepted as satisfactory evidence that pus is absent.

In the first place, the caliber of the needle is too small to allow thick pus to pass into it, and in the second, the needle is frequently too short to pass through the thoracic parietes and the thickened pleura beneath. The hypodermic needle must not be relied upon to settle such an important question, and the explorative puncture must be made one in every sense of the word.

Fraentzel bases the diagnosis of empyema on high fever, becoming hectic after from two to five weeks, pain on pressure, and constant

pain and œdema of the affected side. The physical signs of an effusion are readily recognized in simple pleuritis, but are unreliable in old cases of empyema. This conclusion is justified by the reports of late operations upon hitherto unrecognized cases of empyema that had gone on from bad to worse for months. These reports can be found in the literature of all civilized countries. The explanation of the unsatisfactory character of physical examinations of old cases of empyema must lie in the altered conditions of pleura and ribs and the frequent presence of air or gas in the cavity. The costal pleura is at times over an inch thick, the intercostal spaces are gone, the ribs overlapping each other like shingles on a roof. Amphoric phenomena of all kinds can be heard, which change often from day to day. Thus it happens that tuberculosis is supposed to be present, that a large cavity in an otherwise infiltrated lung is diagnosed, or when no gas is present fibroid phthisis is declared to exist

Now, if the attention of the attendant could be fixed upon the character of the fever, and if he would observe its hectic character distinctly different from the curve of an ordinary case of tuberculosis; if he would observe that occasionally for a longer or shorter period the patient would apparently improve, be free from fever and have little or no pain, only when a new absorption of pus occurred to return suddenly to his former state.

It may require some credulity to believe, but it is nevertheless true, that a patient with an external fistula, that had at times discharged large quantities of pus, should have been sent to Asheville by his physicians to recuperate from a severe attack of pneumonia. At my first examination I diagnosed pyo-pneumo-thorax. The diagnosis was confirmed by Drs. von Ruck and Meriwether and substantiated by an operation, fully two quarts of stinking pus being found.

Another case that had traveled to Denver and thence to the sea-shore, and finally reached Asheville, which I saw in consultation, presented the history of repeated attacks of hectic fever, with periods of comparative comfort and entire immunity from fever. Also an interesting variety of diagnosis, comprising every possible pathological condition. A free opening could not be made on account of the objections of the patient and the family, but a tube was introduced through which a small quantity of pus escaped

The tube was removed in a very short time during my absence, but months later a radical operation was made at the patient's home and a large abscess cavity disclosed. Had it been done in this pure and tonic atmosphere, at a time when the patient still had the necessary strength, the fatal result might have been averted.

Such examples are sufficient to awaken some interest in this subject, and to cause those wanting in the so-called surgical instinct to study the symptoms of pus in cavities. If its presence is suspected its location is not extremely difficult.

The treatment consists in evacuating the pus, and in old cases of empyema in removing sections from as many ribs as may be necessary to allow the side to sink in against the lung, and thus obliterate the cavity. This must be done when the pleura is so thickened and the adhesions so firm that the lung cannot expand, nor can the diaphragm ascend high enough to close the cavity, which can only be accomplished by removing a section from the chest wall. Boeckel, of Strassburg, made the most extensive operation of this nature on record. He not only resected freely from all accessible ribs, but also removed nearly all of the scapula below the spine. His patient made a complete and permanent recovery.

In the most recent cases and in children syphon drainage is the best method of treatment. Intelligent and constant nursing is the most important element of success, as the free end of the drainage-tube must be continuously immersed. To insert it a large-sized trocar and canula and a long piece of stiff drainage tubing is all that is necessary. The drainage-tube must fit accurately in the canula. The trocar and canula are plunged into the cavity, in the axillary region by preference, the trocar withdrawn and the tube introduced through the canula, which is then also withdrawn, leaving the tube in the cavity, where it is firmly held by the pressure of the soft parts. A large-mouthed bottle, containing a solution of bichloride of mercury is used in which to immerse the free end of the tube. Thus the pressure of the atmosphere is kept away from the cavity. The pressure in the cavity after a few inspirations becomes slightly negative, all fluids are slowly aspirated, and in a very short space of time the cavity is closed. The cavity should not be washed out if the pus is not offensive. If it is desired to flush out the cavity, the bottle is filled with the solution to be used and elevated above the thorax; when the fluid has nearly all

run into the thorax it is lowered and allowed to flow back. Whenever the bottle is to be emptied the tube must be securely closed with a good clamp.

In the per-oxide of hydrogen we have a most excellent disinfectant and cleanser. Small quantities of it should be thrown into the cavity, and this repeated until it comes out without foaming. Iodine water is another reliable agent.

The aspirator should seldom be used to empty the thorax. When a serous effusion becomes dangerous on account of its volume, then an aspirator, that has been thoroughly cleansed, in the surgical sense, is allowable. So many serous effusions become infected from the hollow needle that the aspirator is one of the most frequent causes of empyema. To remove a purulent effusion with an aspirator is bad practice.

To recapitulate—a collection of pus, whether in the lung or in the pleural cavity, should be drained. In recent cases syphon drainage promises the best results with the least possible deformity In old neglected cases Estlaender's operation is indicated.

URINALYSIS—A SYLLABUS OF THREE LECTURES DELIVERED BY INVITATION BEFORE THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA, AT ITS THIRTY-EIGHTH ANNUAL SESSION, HELD IN ASHEVILLE, MAY 26TH, 27TH AND 28TH, 1891.

By J. W. LONG, M.D., Randleman, N. C., Chairman Section on Gynecology (1891) of the Medical Society of the State of North Carolina; Secretary Randolph County Medical Society; Member of the Southern Surgical and Gynecological Association, etc., etc.

Comprising:

Preliminary remarks.
The albumin tests.
The sugar tests.

THE URINE.

Selection of a Specimen.

1. Be sure you get the *patient's* urine.
2. The specimen should be voided about 3 hours after a meal of mixed food.
3. Morning urine is least likely to contain either sugar or albumin.
4. Urine voided 3 or 4 hours after a meal gives effects of both food and exercise.
5. Examination should be made within 6 to 10 hours after urine is voided.
6. If not, add resorcin, 2½ grs. to the ounce, which preserves urine for several days.

Quantity.

1. Average 40–50 f ℥.
2. Women pass less than men.
3. In disease—varies from total suppression to 30–40 pints.

Frequency of Micturition.

1. Diminished or increased frequency invites inquiry.
2. Rising at night demands investigation.

3. Increased frequency suggests :
   (*a*) Albuminuria.
   (*b*) Diabetes.
   (*c*) Bladder, or urethral troubles.
   (*d*) In women—(1) Pelvic inflammations.
   (2) Pregnancy.
4. Diminished frequency is indicative of retention or suppression.

Color.

1. Normal—pale yellow—varies considerably.
2. In disease—ranges from color of water, through various shades of yellow and red, into black.
3. Colorless urine indicates absence of normal pigments, as in anæmia, chlorosis, etc.
4. Pale greenish color suggests sugar.
5. High colored urine, as in acute febrile attacks, indicates absence of water and presence of abnormal coloring matter—uroërythrin.
6. Blood and bile give their peculiar colors.
7. Certain drugs, as santonin and rhubarb, produce characteristic colors.
8. Acid urines are deeper colored than alkaline urines.
9. Vogel's scale of colors is the best.

Reaction.

1. The reaction for the whole 24 hours is always acid.
2. The degree of acidity varies much, being greater on rising, after using acids, flesh diet and exercise. The reaction becomes less acid (or alkaline rarely) after meals, vegetable diet, use of alkalies, when mixed with blood or pus, and when gastric juice escapes by a fistula.
3. The acidity is due to acid sodium phosphate.
4. The reaction is determined by red and blue litmus paper.
5. An alkaline reaction may be due to fixed or volatile alkali.
6. The first is due to excess of (alkaline) carbonate of potassium and sodium, and reflects a condition of the blood.
7. The second is due to carb. amm., and is caused by alkaline fermentation, dependent usually upon an inflammatory condition of the lower urinary tract.

8. These are easily distinguished by the red litmus paper, which on drying retains the blue color if due to a fixed alkali, but changes back to red if due to the volatile alkali.

9. Acid fermentation begins early and reaches maximum on the third day—it is due to mucus, a fungus, and absorption of oxygen.

10. Afterwards alkaline fermentation sets up, due to an unorganized ferment secreted by a micro-organism—torulæ ureæ (Lea)—which splits urea into amm. and water.

11. This alkaline fermentation may take place in the bladder by the use of dirty catheters—introducing micro-organisms.

Specific Gravity.

1. 1015—1025—as usually stated.
   1018—1023—Purdy.
2. Infants, 1003—1006—(Macumme).
3. Pathologically, ranges 1002—1050.
   1002—1043—extremes I have seen.
4. Any marked deviation demands investigation.
5. The s. g. is increased in :
   (*a*) Diabetes Mellitus, (*b*). First stage of acute Bright's.
   (*c*) Acute fevers, (*d*). Forced marches.
6. The s. g. is decreased :
   (*a*) After first stage of acute Bright's and in all other forms of Bright's.
   (*b*) Hysterical and spasmodic hydruria.
   (*c*) After large draughts of liquids.
7. The proportion of solids to liquids influences s. g. As a rule, the less urea the less the s. g., albuminuria and sugar being eliminated.
8. Squibbs' urinometer is the only reliable one :
   (*a*) Standardized for tem. 77.0, with variations marked for each instrument.
   (*b*) Air chamber is double cone.
   (*c*) Jar is fluted.
   (*d*) Has thermometer with it.

Transparency.

The transparency may be diminished—turbid—from the following causes :

Mucus.

1. Appears as delicate cloud floating towards the bottom.
2. Increased by any irritation of the genito-urinary tract.
3. More apt to be present in urine from females.
4. Heat, alkalies, nor strong acids affect the turbidity from mucus.
5. The precipitate is increased by alcohol, dilute mineral acids, acetic or citric acid, which coagulate the mucin.
6. If mucus is abundant, pus is apt to be present as they are from the same cause, the difference being in degree. If urine containing mucus does not give albumin reaction no pus is present.

Earthy Phosphates—Lime and Magnesia

1. The phosphates of the urine are earthy phosphates and alkaline phosphates.
2. The alkaline phosphates are soluble in water and acids, and not precipitated by alkalies or heat
3. The earthy phosphates are soluble in acids, but insoluble in water, and are precipitated by alkalies and heat. Only these concern us.
4. Earthy phosphates may be present in urines alkaline or normally acid.
5. Turbidity dissipated by cids. Turbidity increased by alkalies Turbidity increased by heat.
6. Source of error in the heat and acid test for albumin.
7. Held in solution by free carbonic acid.

Mixed Urates.

1. In health the uric acid is held in combination with potassium, amm. sodium, calcium and magnesium.
2. These compounds (urates) are very soluble at temperature of body, but are precipitated when tem. of urine is lowered, as in winter.
3. Uric acid is a bibasic salt forming acid urates and neutral urates. The former are less soluble than the latter and form bulk of deposits.
4. An acid added to solution of neutral urates seizes upon a part of the base (sodium), leaving an acid urate, which is immediately precipitated in a finely granular form. This happens in the nitric acid test for albumin.

5. The urates rapidly subside, forming white or pink deposit more or less bulky.

6. The turbidity is dissipated by the heat.

Pus.

1. The presence of pus is always pathological.

2. Forms opaque white sediment if urine is acid.

3. Settles rapidly in inverse proportion to amount of mucus present.

4. Resembles pale urates and phosphate of lime.

5. Heat dissolves former and acids dissolve latter, while both increase turbidity from pus by coagulating albumin contained in liq. puris.

5. Alkalies convert pus into glairy viscid mass.

Donne's test:

1. Let deposit settle and pour off supernatant fluid.

2. Add liq. potassæ.

If pus forms viscid gelatinous substance resembling mucus, or white of an egg.

6. This reaction takes place in urine after alkaline fermentation takes place, between pus and carb. amm.

7. This may occur in bladder.

8. In examining specimen with mucoid deposit be sure to ascertain the reaction.

9. Urine containing pus from pelvis of kidney contains little mucus and is acid.

10. If source of pus is from the bladder it is apt to become quickly alkaline, if not already so, when Donne's reaction takes place.

Chyle.

1. Chylous urine is always pathological.

2. It is essentially fat in minute subdivision.

3. Caused by a filiform worm 8-10 centem. (1-3 in.) long.

Filaria Sanguinis Hominis.

4. Common in tropical countries.

5. Turbidity ranges from mere cloud to milkiness.

6. Fat rises to top and forms creamy layer.

How to Clarify Turbid Urines.

In all albumin tests urine must be clear. If not—

1. Filter through Sweedish filter-paper.
2. Add liq. pot. 1 part.
   Urine 4 parts.
   Warm and filter.
3. Add ½ gtt. magnesian fluid. Warm and filter.

Magnesian fluid :

℞.—Sulph. mag..... 1 part.
Chloride amm..... 1 "
Aq. destillat..... 8 "
Liq. amm..... 1 "
M.

General Precautions.

1. Never let flame touch test-tube above fluid, to prevent breaking.
2. Hold side of tube to flame while boiling, to prevent explosive boiling.

Albumin Tests.

Three kinds of albumin :

1. Serum albumin, coagulated by heat.
2. Alkali albumin, not coagulated by heat.
3. Acid albumin (syntonin) not coagulated by heat.
   Easily converted from one kind to another.

Heat and Acid Test.

1. Urine test-tube ⅔ full.
2. Boil (top).
   If precipitate :
   (*a*) Earthy phosphates.
   (*b*) Albumin.
3. Add nitric acid ½ gtt., then 5-30 gtt.
   If phosphates, precipitate disappears.
   If albumin, precipitate increases.
4. Cover test-tube and set aside 12 hours.
   If precipitate :
   (*a*) Acid urates, acid acting in neutral urates.
   (*b*) Uric acid, reaction of acid on acid urates.

(*c*) Nitrate urea, urine concentrated and highly charged with urea.

(*d*) Albumin.

5. Boil—all dissolved except albumin.

Nitric Acid Test.

(By Heller's, or the contact method.)

1. Nitric acid, ½ inch in test-tube.
2. Urine, from pipette.

If precipitate:

(*a*) Albumin—sharp white band or zone, at junction of urine and acids; increased by heat.

(*b*) Acid urates—cloud, begins to form higher; diffused through urine; dissipated by heat.

(*c*) Nitrate urea—union high s. g.; crystal resemble pine-straw; forms under line of junction; dissolved by heat.

(*d*) Oleo-resins—yellowish white cloud; dissolved by alcohol; (M. says danger of explosion.) Detects 1-100th per cent., or 1 part to 100000; Millard, *N. Y. Medical Journal*, May, 1891, p. 526.

Precautions.

1. A brown ring occurs with normal urine from coloring matter, and may color albumin zone. If indican is present, ring is rose-red or violet. If blood-coloring matter, brownish-red ring. If biliary coloring matter, greenish hue.

2. Hold test-tube obliquely while adding urine.

3. Have end of pipette roughened.

4. The cloud of urates may be overcome by diluting with 2 or 3 parts of water.

Robert's Acid Brine Test.

℞.—Sat. solution salt..... Oi.
Hydrochloric acid..... ℥ i.

M. and filter.

1. Has high s. g.
2. Contact method.

3. Equal in delicacy to nitric acid.
4. Less caustic and less corrosive.
5. No source of error (Tyson), but zone from urates may occur.

The upper faint cloud that forms after 20–30 minutes not well understood.

Robert's Acid Magnesian Test.

℞.—Sat. solution sulph. mag..... ℥ v.
Nitric acid..... ℥ i.
M.

1. Watery clear solution, does not fume, stain or burn fingers; s. g. 1240; may be carried in bottle in pocket with safety.
2. Contact method.
3. Detects albumin, 1—1,000,000 (Millard).
4. Subject to errors of nitric acid.
5. Cannot be used with urine clarified with liq. pot. on account of decompositions induced.

Millard's Test.

℞.—Phenic acid, 95 p. c..... 3 ii.
Acetic acid, pure..... 3 vii.
Liq. potassæ..... ℥ ij. 3 vj.
M.

1. Contact method.
2. Detects albumin when present 1 part to 300,000, and is one of the best tests we have.
3. Urates only source of error, which may be overcome by dilution. (See nitric acid test)

Ferrocyanide Potassium Test.

1. Urine, 3 or 4 inches in test-tube.
2. Make strongly acid with sat. solution citric acid.
3. After a few moments filter through double Sweedish filter paper.
4. Sat. solution ferrocyanide potassium, 3 ss.

If albumin, precipitate quickly forms.

1. The precipitate, after adding citric acid, is mucin, which, filtered out, removes that source of error.
2. Test does not respond to :

(*a*) Peptones.
(*b*) Vegetable alkaloids—quinine, strychnine, etc.
(*c*) Oleo-resins.

3. Responds to all modifications of albumin.
4. Equal in delicacy to nitric acid.
5. Must avoid heat, which decomposes ferrocyanide.

Trichloracetic Acid Test.

1. Urine, test-tube half-full.
2. Crystal trichloracetic acid.

If albumin :

Zone of turbidity quickly forms just above acid.

Zone of turbidity from urates forms more slowly and not so wide—may be overcome by free dilution with water before test.

"In the *Johns Hopkins Hospital Bulletin* there is a report, by Dr. D. Meredith Reese, on trichloracetic acid as a test for albumin in urine. An editorial note in the *British Medical Journal* had called attention to this new test, which Boymond professes to have first brought into notice. This reagent precipitates albumin in cold solution, and is considered to rank among the most delicate tests. Under Dr. Reese's observation 87 specimens of urine were examined. In 25 cases there was no reaction of any kind. In 14 cases where there was no reaction in check-experiments the trichloracetic acid gave a precipitate. In 11 of these granular, epithelial and hyaline casts were found, and in 3 of these 11 cases the post-mortem showed distinct changes in the kidneys. In 3 cases where heat, acetic acid and and nitric acid gave no precipitate of albumin, a precipitate was obtained with picric and trichloracetic acids; and casts were found in these 3 instances. Trichloracetic acid is a delicate test, is prompt and easily applied, and gives no discoloration or colored zone.—*New York Medical Journal, August* 30, 1890.

In the *London Lancet* (March 21, 1891) Dr. Tirard speaks of the practical value of trichloracetic acid as a test for albumin in the urine, and says :

"I have long been employing this test, both in private and in insurance examinations, and can speak very highly of its results. I have been in the habit of comparing its reactions with those given by nitric acid and picrid acid, and while I have never found it fail to react in specimens in which albumin has been discovered

by other tests, it has given a line of opacity in numerous samples which have been unaffected by nitric acid or picric acid. In some of these the trichloracetic acid appeared to be a more delicate test, since in cases with a history of an acute attack of nephritis the urine has often given a line of opacity after it might have been declared free from albumin when the customary tests were employed. On the other hand, the need of the warning originally given by Boymond (*Repert. de Pharm.*) has been very strongly impressed upon me by several cases, viz: that when the urine is rich in urates the reaction may appear without any albumin being present, and this possible source of error can only be avoided by free dilution of the urine before making the test.

"With regard to the desirability of carrying this reagent in the pocket, the effects of a crystal on a piece of blue paper or on the blade of a knife have been sufficient to deter me from making the experiment. Although trichloreatic acid may be used in either a solid or liquid form, it gives the most striking results when a good-sized crystal is dropped into the test-tube containing the urine. The crystal speedily liquefies, and, if albumin is present, produces a zone of turbidity in the urine just above it; otherwise a sharply defined line marks the junction of the white acid with the yellow urine. The zone of turbidity appears immediately when due to albumin, but when due to urates it forms more slowly, and is not so wide."

Quantitative Tests for Albumin.

Physicians are guilty of much carelessness on this subject. We often hear of 25, 50 and 90 per cent. of albumin. Of course, the proportion in bulk is meant, but is seldom so stated.

Three or 4 per cent. is probably the maximum amount, as blood contains only 5 per cent.

Two per cent. albuminuria is a large one, ½ per cent. is much more common.

Heat and Acid.

Mark a test-tube in tenths, with a file, and estimate proportion of settled precipitate, after boiling and adding acid.

Esbach's Albuminometer

Is a glass tube, graduated to show the number of grammes to the litre.

To use the instrument, fill the same to U with the urine, and to R with the test solution; then mix by agitation. Close the tube by a rubber stopper and lay the whole aside for 24 hours to obtain a perfect and well settled precipitation.

Each of the main lines of division to which the accumulated precipitation reaches represents one gramme of albumin in one litre of urine, or 7.68 grs.—Oi.

The test solution consists of—

10 grammes picric acid, to coagulate the albumin... 3 iiss
20 grammes citric acid, to keep the phosphates in solution ..... 3 v
Boiling water sufficient to make one litre..... O 2.113
2 grammes picric acid represent one gramme albumin.

The per cent can be told by moving the decimal point one figure to the left.

Less than five grammes to litre or 1-20 p. c. cannot be accurately estimated.

Sugar.

1. Passing more than 3 pints of pale urine day after day, with s. g. 1030 or over, is suspicious of diabetes.

2. Albumin interferes with any heat test for sugar, therefore, if present, must be removed by boiling acid and filtering.

3. Nearly all tests for sugar (glucose) depend upon its property of abstracting oxygen in the presence of an alkali.

Böttger's Bismuth Test.

1. Liq. pot. 1 part.
2. Urine 1 part (2 parts—Buch.)
3. Subn. bismuth, "a pinch"= { $BiONO_3$ / Oxynitrate of bismuth.
4. Shake and boil for two minutes.

If sugar:

(*a*) Gray oxide bismuth, Bi_2O_3, falls as a powder.
(*b*) Black metallic bismuth, Bi. " " "

Precautions.

(*a*) If only a small amount of sugar is present, must use a very small granule bismuth.

(*b*) Test not good if copper salts are present.

(*c*) Albumin or other sulphur-containing substances, as pus, blood, mucus, etc., may produce black sulphide bismuth, Bi_2S_3, which resembles metallic bismuth.

Nylander's Test.

℞.—10 p. c. solu. caust. soda 100 c. c. = { ℞.—Caust. sod., ℈viii; Aq. q.s.... ℥iiiss

Rochelle salts, c. p., 4 grammes, =..... ℥i

Dissolve by heat, stop boiling, and while hot add

Subn. bismuth 2 grammes, =..... ℥ss

Shake occasionally while cooling, decant, and keep in dark-colored bottle in a dark place.

1. Urine, 1 part—Buch.
2. Solution, 2 parts.
3. Boil.

If sugar: dark mahogany or black precipitate metallic bismuth and suboxide.

Note—Simonds applies the test as follows:

1. Urine test-tube half-full.
2. Solution, about one-third.
3. Boil upper layers only.

Is reduced by:

1. Sugar, cold.
2. Normal urine.

Advantages.

(*a*) Keeps better than Fehling's and is less cumbersome.

(*b*) Less delicate than Fehling's, reducing only 1-10th per cent., though Buch says it always give reaction when Fehling's does.

(*c*) Not so readily reduced by other substances.

The Copper Tests.

Depend upon the power grape-sugar has of reducing oxide of copper, and other metallic oxides, to a lower state of oxidation.

Trommer's Test.

In this test the oxide of copper is set free when the solution of sulphate of copper is added is the test mixture.

1. Urine, 4–5 c. c.

2. Liq. potassæ, 4–5 c. c.

3. Solution sulph. copper (1–30), 1–2 gtt., $CuSO^4$.

Blue precipitate of hydrated cupric protoxide, Cu2HO, is thrown down if sugar is present.

4. Agitation redissolves product, a beautiful blue transparent fluid.

5. Boil for a few seconds—30—only.

(*a*) Copious yellow precipitate, hydrated cuprous suboxide, Cu^22HO.

(*b*) This afterward loses its water and falls as red powder, cuprous suboxide, Cu_2O.

This powder clings closely to bottom and sides of test-tube.

Precautions.

1. A specimen treated the same way, but not boiled, may be set aside for 24 hours, as most other organic substances that reduce the copper salts do so after boiling.

2. Albumin and some other substances prevent reduction of cupric oxide.

3. Do not use too much solution cupric sulph.

4. Do not boil over half minute.

5. The earthy phosphates are precipitated when the potash is added, and must not be taken for cupric protoxide. They can be eliminated by adding potash and filtering before adding the copper solution.

6. Mere change of color is of no significance.

7. There must be an actual precipitate of yellow or red oxide.

8. Uric acid and other substances found in urine will reduce the cupric oxide.

9. Poor test, because of the many sources of error—Buch.

10. With proper precautions reliable results may be had when 1–2 to 1 per cent. sugar is present.

Fehlings' Test—Squibb's Formula.

1. As stated, an alkali added to solution sulph. copper throws down precipitate of hydrated cupric protoxide, Cu2HO.

2. This precipitate is not dissolved by an excess of alkali, unless some organic matter is present.

3. For this reason, if grape-sugar happens to be present in the suspected fluid, the precipitate of hydrated cupric protoxide is immediately dissolved, forming a beautiful transparent blue solution.

4. These facts enable us to construct a fluid which will hold the protoxide in solution. Tartaric acid, which does not reduce the copper, is usually chosen.

5. The tartaric acid renders the solution—Fehling's—so notoriously unstable that to be of service it must be freshly prepared for each application.

6. To overcome this difficulty Dr. Squibb makes the solution in two portions:

(*a*) Solution of alkaline tartrate.

(*b*) Solution of cupric sulphate.

These solutions will keep for a number of months, and are used as follows:

1. Copper solution, 1 c. c.
2. Water, 1 c. c.
3. Alkaline tartaric solution, 1 c. c.
4. Water, 1 c. c.
5. Mix well, without putting finger over mouth of test-tube.
6. Boil—if solution is good it remains clear.
7. Let solution cool a moment or two.
8. Urine, 1 c. c.
9. Mix well.
10. Boil.

If sugar, loses its transparency and becomes of dirty greenish color.

Haine's Test.

℞.—Pure sulphate copper..... grs. xxx
Pure water..... ℥ ss
Make perfect solution and add pure glycerine..... ℥ ss
Mix thoroughly and add liq. potassæ... ℥ v.

This makes a perfectly clear dark-blue liquid, is perfectly stable and can be set aside indefinitely.

1. Solution, ℥ i.
2. Boil gently, to see if solution is good.
3. Urine, gtt. 6–8, not more.

If sugar, abundant yellow or yellowish-red precipitate.

Dr. Purdy uses this test constantly with most satisfactory results.

While these tests are nearly faultless in point of delicacy, their accuracy is not great. They are only negatively sure, but a positive result with any of these is nearly valueless, because of other reducing substances that may be present. I have given the best practical tests known, but even they are not free from error.

The great trouble with all reduction tests is that other substances than sugar will sometimes reduce them. Among these substances are :

1. Normal ingredients of the urine, as :
   (*a*) Uric acid.
   (*b*) Creatinin.
   (*c*) Pyrocatechin.
2. Substances occasionally present in urine, as :
   (*a*) Oxybutyric acid.
   (*b*) Urochloralic acid, from chloral.
   (*c*) Glucoronic acid, from camphor.
   (*d*) Turpenoglycuronic acid, from turpentine.
   (*e*) Marshall's glycosuric acid.
   (*f*) Kirk's urolencic and uroxanthic acids.
3. Drugs during excretion, as morphine, chloroform, salicylic acid, cubebs, copaiba, glycerin, carbolic acid.

Resumé.

Bismuth Test—Reduced by the sulphur compounds.

Nylander's Test—Perhaps the surest (reduction) test, detecting 1-10th of 1 p. c. glucose, but is said to be occasionally reduced by other substances. It has never failed me.

Fehling's Test—Detects 1–20 of 1 p. c. glucose, but readily reduced by other substances. A case recently under my care showed by Squibbs' and Purdy's tests 16 and 18 grs. of sugar to the pint was proven by the phenylhydrazin test in the hands of Dr. Thomas F. Wood to be free of sugar.

Dr. Symond's, in the *New York Medical Journal*, June 12, 1890, reports 7 or 8 cases reduced by Fehling and Nylander's tests, and afterwards shown by phenylhydrazin and fermentation to be free from sugar. Frank Donaldson, Sr., reports a case in which the reduction

by Fehling's test amounted to over 8 p. c. of glucose, or over 38 grs. to the ounce, which other test proved to contain no sugar.

Fortunately there are two tests to which we may appeal with the full assurance that we can get positive evidence of the presence of sugar. These are as follows :

Phenylhydrazin Test.

(Devised by Fischer, modified by Ultzmann.)

1. Phenylhydrazin, or its hydrochlorate, 1–2 inches.
2. Sodium acetate, pulverized, 1–2 inches.
3. Urine—test-tube half-full.
4. Shake till sodium is dissolved.
5. Heat gently to boiling point and boil 1–2 minutes.
6. Decant into conical glass and let cool.
7. Place drop of sediment under microscope.

If sugar—acicular crystals of golden-yellow color—phenylglucosazone—formula $C_{18}H_{22}N_4O_4$.

These crystals have marked tendency to crystallize in stellate or rosette form, like sheaves of wheat or feathers.

The crystals are formed in from 15 minutes to 48 hours, according to the amount of sugar present—can be seen in 3 hours if 1-20th per cent. sugar.

Symonds has found the crystals in urine containing only 1-100th of 1 p. c. sugar, but only after 48 hours.

This test reacts with lactose, galactose and maltose. None of these except lactose occur in urine, and this only during acute suppression of lactation. Tyrosin forms somewhat similar clusters, but the crystals are colorless.

The crystals of phenylglucosazone are characteristic and a positive indication of sugar.

Fermentation Test.

The only other certain test for sugar is that by fermentation, which is just as accurate, though less delicate, than phenylhydrazin. There are two methods of doing it :

1. Take specific gravity of urine.
2. Put 4 ounces in a 12-ounce bottle with nicked cork.
3. Add yeast, ʒ i.

4. Set in warm place—60–80° F.—for 12 or 24 hours, when fermentation will be complete.

5. Take s. g. and subtract from first s. g. Each degree lost equals 1 gr. sugar to the ʒ i. The number of degrees lost by 23 gives the per cent.

Example: s. g. 1040 before fermentation.

s. g. 1030 after ' =10° lost, or 10 grains sugar to the ounce—10 × .23=2.30 p. c.

This test, while accurate as to the presence of sugar, is only approximately correct as to the amount of sugar, and will not act with less than 5 p. c. or 2½ grs. sugar to the ounce. It is less delicate than the method by

Einhorn's Tubes.

By this method the carbondioxide, CO^2, given off by the fermentation is collected and measured. One gramme of glucose, when fermented, will form 250 c. c. of carbondioxide. By this method 1-10 p. c. glucose can be demonstrated.

Estimation of Sugar in Urine.

In a paper read before a recent convention of German naturalists, Dr. U. Haussmann stated that he had concluded from the results of practical experience that the best method of estimating sugar in urine is by means of fermentation, giving this method the preference over the use of bismuth, copper or phenylhydrazin. For a qualitative test, the urine should be first boiled, to remove dissolved gases, and, after cooling, introduced with pure pure yeast into a U tube, of which the longer arm is sealed, and maintained at a temperature of 35° to 40° C.—95° to 104° F. A large bubble of gas collects in this arm after two or three hours, even if only 0.05 per cent. of sugar be present. Good quantitative results, according to Dr. Haussmann, may be obtained by a comparison of the reduction and polarizing equivalents, and also of the specific weights of the solution, determined before and after fermentation of the liquid.—*Druggists' Circular and Chemical Gazette.*

Directions:

Take one gramme of fresh commercial compressed yeast, or 1-16 of a cake of Fleishmann's yeast, shake thoroughly in the graduated

test-tube with 10 C.C. of the urine to be examined. Then pour the mixture into the bulb of the saccharometer. By inclining the apparatus the mixture will easily flow into the cylinder, thereby forcing out the air. Owing to the atmospheric pressure the fluid does not flow back, but remains there.

The apparatus is to be left undisturbed for 20 to 24 hours in a room of ordinary temperature.

If the urine contains sugar, the alcoholic fermentation begins in about 20 to 30 minutes. The evolved carbonic acid gas gathers on the top of the cylinder, forcing the fluid back into the bulb.

On the following day the upper part of the cylinder is filled with carbonic acid gas. The changed level of the fluid in the cylinder shows that the sugar reaction has taken place and indicates by the numbers—to which it corresponds—the approximate quantity of sugar present.

If the urine contains more than one per cent. of sugar, then it must be diluted with water before being tested.

Diabetic urines of straw color and a specific gravity of 1018–1022 may be diluted twice; of 1022–1028, five times; 1028–1038, ten times.

The original—not diluted—urine contains in proportion to the dilution two, five or ten times more sugar than the diluted urine.

In carrying out the fermentation test, it is always recommended to take, beside the urine to be tested, a normal one, and to make the same fermentation test of it.

The mixture of the normal urine with yeast will have on the following day only a small bubble on the top of the cylinder. That proves at once the efficacy and purity of the yeast.

If there is likewise in the suspected urine a small bubble on the top of the cylinder, then *no* sugar is present, but if there is a much larger gas volume, then we are *sure* that the urine contains sugar.

We have unconsciously wandered into the

Quantitative Sugar Tests.

(Fehling's–Squibbs' Formula.)

The two solutions are accurately made, and when put together in equal proportions, 1 c. c. of the mixture = 5 milligrams glucose.

In other words, 5 milligrams grape-sugar will reduce exactly the amount of protoxide of copper contained in 1 c. c. of the solution :

℞.—Copper solution ..... 1 part.
Tartrate solution ..... 1 "
M.

1. Water, 4 c. c., ½ inch.
2. Fehling's solution, 1 c. c.
3. Urine, 1 c. c.
4. Boil.

If 5 mg. glucose are present, the blue color will all be discharged. If urine is highly saccharine, dilute with 1 to 10 parts water and multiply product in mg. by the total number of parts used—urine 1 part, water 3 parts = 4 parts. If 1 c. c. of this solution discharges all the blue color, then the urine used contains 5 mg. + 4 = 20 mg. to 1 c. c, or 2 p. c.

If 1 c. c. urine contain	5	mg.	sugar	=	.5	p. c.,	2.4	gr.—	℥ i.
" ½	"	"	"	=	.25	"	1.2	"	"
" ⅓	"	"	"	=	.16	"	.8	"	"
" ¼	"	"	"	=	.125	"	.6	"	"
" 1-20	"	"	"	=	.1	"	.5	"	"
" 1-40	"	"	"	=	1	"	4.8	"	"
" 1-80	"	"	"	=	2	"	9.6	"	"
" 1-100	"	"	"	=	5	"	24.0	"	"

Purdy's Quantitative Test.

1. In doing the quantitative test with Fehling's solution the precipitation of the suboxide of copper renders the solution so turbid that it is hard to tell when the blue color is all discharged. Adding urine little at a time and waiting for the suboxide to settle, consumes too much time.

2. To overcome this difficulty Pavy added ammonia, which holds the suboxide in solution and improves the working of the test.

3. Unfortunately Pavy's solution is more unstable than Fehling's,

4. To overcome the instability Schmiedeberg substituted mannite for the tartaric salt, which is the cause of the instability.

5. Purdy has simplified and improved this formula by substituting pure glycerine for the mannite—this makes a test solution

that is stable, simple, cheap, rapid in application, accurate in results and well adapted for clinical purposes.

Purdy's Solution.

℞.—Cupric sulphate—pure..... ʒ ss.
Caustic potash—pure, in sticks..... ʒ iiss.
Strong ammonia—s. g. .880.....f ʒ vss.
Glycerin—pure.....f ʒ vi.
Water, distilled, q. s.....Oi.

Dissolve the copper in part of water and add the glycerin. Dissolve the potash in part of water and mix the two solutions When cold add the ammonia, and finally water, q. s. Oi. Carefully filter and keep closely stopped.

1. Distilled water, f ʒ i in ʒ iv. glass flask.
2. Solution, fOzi., 30 c. c.
3. Bring to boiling point.
4. While gently boiling add urine, drop by drop, from minim pipette.
5. When color begins to fade, let 10–12 seconds elapse between drops till the blue color is entirely gone.

It takes just 1-4 gr. of grape-sugar to discharge all the blue color in the Ozi solution. The number of minims it takes to decolorize the solution multiplied by 4 contain 1 gr. sugar, and the number of minims in ʒ i (480), divided by the number of minims containing 1 gr., give the amount of sugar in an ounce, thus :

. If 10 minims decolorize the solution, $10 \times 4 = 40$ minims, contain 1 gr., $480 \div 40 = 12$ gr., contained in ʒ i= 2.5 p. c.

The per cent. is obtained by dividing the number of grains in an ounce by 4.80.

Upon cooling, the blue color slowly returns, due to the absorption of oxygen from the atmosphere reconverting the suboxide into blue protoxide.

Advantages

1. Rapidity of application, 5–10 minutes.
2. Accuracy—if 2–30 gr. to Ozi, shows within 1-10th to 1-20th, gr.
3. Perfect cleanliness and simplicity—no copper products clinging to test-tube, or turbidity.
4. Stability almost indefinitely.
5. Cheapness—20 cents a pint.

SOME NOTES ON THE USE OF CUPRIC ARSENITE IN ACUTE DISTURBANCES OF THE ALIMENTARY CANAL; AND SUMMER DIARRHEA AMONG INFANTS,

By W. H. Harrell, M.D, Williamston, N C.

(Read before the Medical Society of North Carolina, at Asheville, May 26th, 1891.)

About three years ago Dr. John Aulde, of Philadelphia, published his experience with cupric arsenite in acute disturbances of the alimentary canal. It was not until the past summer, however, that much was published in the medical periodicals about it. Dr. Aulde claimed to have secured good results from the administration of extremely small doses frequently repeated; his formula being:

℞.—Cupric arsenite..... gr. 1-100th
Aquæ..... Oziv

M. Sig. One teaspoonful every ten minutes until pains and cramps are relieved and the diarrheaic discharges reduced in number.

The discussion provoked by what was termed the "infinitesimal" and "Homæopathic" doses, caused me to institute a series of investigations for myself. The following cases noted was the result:

Case 1.—A. W., female, aged 14. Had eaten a hearty dinner, while apparently perfectly well. Called at 10 o'clock that night, and found the patient suffering with intense nausea, with pain and cramps of bowels. Had vomited the undigested remains of dinner, and had three copious watery evacuations. Applied hot towels to abdomen to relieve cramp, and gave

℞.—Cupric arsenite..... gr. 1-100
Tr. opii deod..... gtts. xxx
Aquæ..... Ozij.

One teaspoonful every ten minutes.

Before the third dose patient expressed herself as being greatly relieved of both nausea and pain. After the fifth dose, she being greatly relieved, ordered the medicine continued at intervals of one or two hours during the night.

At 9 o'clock next day found the patient so well that the case was discharged.

Case 2.—Mrs. B., aged 48. Had diarrheaic discharges to the number of eight to twelve for twenty-four hours, accompanied by the griping pain usually attendant. Began the treatment with a laxative dose of granular effervescent citrate of magnesia, and gave

℞.—Cupric arsenite..... gr. 1 100
Aquæ..... Ozij
One teaspoonful every fifteen minutes.

Had one discharge during the first two hours after beginning treatment; none for the next four hours. Continued the mixture, one teaspoonful every two hours, for twenty-four hours. Three actions altogether during the first twenty-four hours. Discontinued the medicine after the third day. Patient apparently well. No other medication.

Case 3.—Child 4 years old. Called at 10 o'clock a. m., found child fretful, restless and feverish, with intense thirst. Was having small, teasing, greenish actions, mixed with mucus; had been so since the afternoon of the day before. Gave

℞.—Cupric arsenite..... gr. 1-100
Aquæ..... Oziv
One teaspoonful every twenty minutes.

One discharge about one hour after first dose; two more during next five hours. Continued the medicine at intervals of two hours during the night. At 8 o'clock next day found the patient bright, having had only one action during the night—at 12 m. Ordered a ʒ ij dose of castor-oil, which produced a large evacuation of greenish mucus mixed with undigested particles of food.

Discharged the patient same afternoon.

The above three cases are taken from a series of 14, extending over the period of May and June, 1890.

In a number of chronic cases the result was at best only negative. In most cases, also, the addition of tr. opii deod., was undoubtedly an important factor in the treatment. The result leads to the conclusion that it is a remedy of great value in acute gastro-intestinal disturbances, and worthy of a further and fuller trial. It does not, however, seem to be of much value in chronic diarrhea, nor did I

find the good result claimed by some to have been secured in dysentery.

One thing that seems odd is the slight difference between the doses administered to children and to adults.

SUMMER DIARRHEA OF INFANTS.

Entering, as we now are, upon that period so prolific of gastro-intestinal disturbances, I feel that any discussion of them will be of interest to the profession. A common, and at the same time obstinate disease, which we will soon see on all sides, and among all classes of patients, is one to which physicians, as a rule, devote entirely too little study, both as to prevention and treatment. In this paper I shall attempt to review some of the most salient points of diarrhea of infants.

Summer diarrhea, or, as it is frequently designated for want of a better term, "Dyspeptic Intestinal Catarrh," may, according to Dr. Holt, of New York, exist for months in the form of a "lesion" before the attention of a physician be called to the case.

As is well known, the intestines are thickly studded with lymph-glands, and these play no unimportant part in chronic intestinal catarrh. The report of the New York Foundling Hospital for the year 1890 calls attention to the fact that autopsies made in a number of cases disclosed very slight catarrhal change, while the solitary glands and lymphoid masses were found to be greatly enlarged and frequently ulcerated. This leads to the conclusion that the products of decomposition being absorbed are active in causing a congestion, and, in all probability, the rupturing or breaking-down of these glands, the result being a number of ulcers small ulcers of the mucous lining of the canal.

In a paper published in 1888 Meinert, of Dresden, says that out of about 500 fatal cases of diarrhea among infants about 350, until the acute attack, had previously healthy digestive organs. His statement was widely quoted and criticised, from the fact that mothers do not, as a rule, attach any importance to a diarrhea during dentition, sometimes considering it salutory, and even objecting to having it cured. Upon careful investigation we will find that a large number of acute attacks have been preceded by two or three weeks of what the mother calls "indigestion." To this no importance is attached until serious symptoms become

prominent. The practical point to bear in mind is the prevention of the so called "dyspepsia" or "intestinal catarrh." To do this the most careful attention must be paid to finding, or what is of more importance, over-feeding. While this applies to all cases it especially applies to hand-fed infants. The object is to prevent the long-continued irritation of the intestinal glands, caused by the presence of undigested masses and the absorbtion of ptomaines, the product of decomposition. I do not intend to discuss the proper mode of infant feeding nor the proper amount needed by each individual infant, because I have not been able to secure enough information on the subject to warrant it. Every case of infantile diarrhea should be treated as early as it appears, especially during the hot months. If taken early, a great number will readily yield to a simple laxative to clear the canal of offending material and a proper diminution of its usual quantity of food. If it does not yield to this (combined with proper medication), in a few days we may be satisfied that it is something more than "indigestion." Recent investigations seem to have proven summer diarrhea to partake of the nature of a "lesion," one of the most prominent changes being the swelling and rupturing of the solitary follicles, forming minute ulcers. The rational treatment is preventive treatment. Of course we must take into consideration bacterial poisons and intestinal decomposition and fermentation, but the points to be most emphasized in the prevention of chronic diarrhea among infants are :

1. Every case of indigestion should receive early attention.
2. To secure proper digestion we must have proper feeding.
3. Most infants, especially those hand-fed, are over-fed, both in frequency and quantity.
4. Each case, however mild, must be considered as likely to produce serious results if neglected.

In connection with this it will not be out of place to describe a mode of treatment highly recommended by the authorities of most infant asylums, and which Dr. Seibert, of New York, claims to be especially valuable when the gastric functions are impaired. Lavation, or the washing out of the stomach with large quantities of tepid water, which may or may not be medicated, is practiced and commended by several authorities on diseases of children. It is simple, reasonable and practicable. Bathing the stomach walls

with a large quantity of tepid water not only relieves that organ of any undigested food that may be irritating, but is at the same time mildly stimulating to the torpid gastric glands, and a sedative to the membrane lining and nerves supplying it. In the New York Infant Asylum I have seen used an instrument designed for that purpose, which is furnished by all instrument-makers. But the country practitioner may supply himself with a substitute with little trouble and slight expense. I will describe one that I have used and find it answers as well as the more elaborate and costly ones. To the glass reservoir of an ordinary nasal douche attach a piece of rubber tubing (4 or 5 feet long) with a metal clamp similar to the ones used on a fountain syringe. To the other end of the rubber tube attach a Nélaton catheter by means of a small glass tube 4 or 5 inches long. Fill the glass receptacle with tepid water, and with one assistant the operator is prepared. By means of the gag the jaws are kept open and the tongue pressed down until the catheter can be introduced into the stomach, after which the gag may be removed. Open the stop-cock and allow about Ozij or Oziij of water to flow slowly into the stomach by raising the vessel above the head. By detaching the rubber tube from the glass tube and allowing it to hang down, it will form a perfect syphon and empty the stomach again. The first washing will be milky and contain particles of undigested food and mucus, which gives it a ropy consistence. When the stomach is empty attach the rubber to the glass tube again and proceed as before. The operation may be continued until the water returns clear If necessary the water may be medicated.

A large proportion of summer diarrhea may be cured by this means without other treatment. This is particularly true of cases where the gastric symptoms are most prominent.

Of 13 cases thus treated by myself last summer 8 or about 60 per cent. were permanently cured without any drugs whatever.

CLINICAL REPORT OF THE CASE OF JOHN T. D.—MULTIPLE ABSCESS OF LIVER.

(Read before the Medical Society of North Carolina, at Asheville, May 26th, 1891.)

By W. H. Wilson, M.D., Dallas, N. C.

On May 26th, 1890, I was hurriedly summoned to the bedside of J. T. D., aged 67; dark complected and bony frame, and of a tough constitution. Found him suffering with intense pain over entire right hypogastric region; skin cold and clammy; facial expression indicated the greatest agony and anxiety. Patient had been suffering severely for two hours—less severely for twelve hours previous to onset of severe paroxysm of pain. Gave the history of a previous attack of pain in the same region a week previous, which lasted six hours; had taken no treatment up to this time. I at once gave him an injection of ½ grain of morphine and applied hot poultices to seat of pain. Administered stimulants. Patient could not lie down—had not for previous night. In twenty minutes I repeated the morphine and stimulants as there was no abatement of pain. (Had no chloroform or would have administered it.)

After waiting some twenty minutes more I repeated the morphine injection, continuing the hot applications, which was followed in a few minutes by partial relief from pain, warmth of skin, which up to this time had been cold and clammy. Facial expression relieved of its agonizing appearance, but could not lie down. In one hour I repeated the morphine, which rendered the patient easy in twenty minutes, and he resumed the recumbent position; but with all this morphine he would scream with pain when moved. His mind was now in a perfect stupor. I pronounced the case one of hepatic colic. Left him a prescription of calomel, ipecac and rhubarb, to be given in six hours at intervals of two hours until three powders were taken, to be followed by a large dose of a saline cathartic in six hours after administration of last powder. In a few hours bowels were freely moved and actions of a very bilious nature. I did not examine them for gall-stones.

After my second visit, on May 27th, I left the case in care of Dr. C. E. Adams, to attend the North Carolina Medical Society.

Pain returned after morphine died out, but less severe. Dr. A. gave morphine and antipyrine as temperature had become hyperpyretic. Repeated liver stimulants on night of 27th, which acted well. Tongue, which had been heavily coated, now began to clean off. Pain still present, but less severe. Dr. A. blistered and continued antipyrine at night, which gave him rest. Dr. A. also gave lithiated hydrangea.

On the 29th and 30th symptoms were, pain over affected region; fever 101°; tongue still slightly coated; no appetite.

On the 31st I returned and took charge of his case. As kidneys had been acting well I stopped the hydrangea. Gave him 5 grs. quinine every six hours and muriatic acid three times a day.

On night of June 1st gave a purgative, which acted well. Continued acid and quinine. Lungs still clear up to this time, and other symptoms unchanged. These symptoms continued resembling a case of bilious fever until the 5th of May, being the ninth day of his disease, when his bowels began to run off; actions composed almost entirely of bloody matter. These discharges relieved the pain over hepatic region, and I then pronounced his case one of abscess of liver pointing into bowels. Actions continued of this character for four days. Symptoms abated and patient seemed better, but weak.

On May 9th, the thirteenth day of his disease, patient was seized with a violent spell of coughing, which lasted two hours, during which time he expectorated about two pints of almost pure matter or pus. Lungs had been clear up to this time; this I considered a rupture of the abscess of the liver into the lung. Temperature, which up to this time had been 100° in morning and 102° in the evening, became normal; skin moist and clear, appetite improved and tongue cleaned off nicely. Had a paroxysm of coughing about every twelve hours for four days, during which time he expectorated pus from the ruptured abscess. Bowels continued to move and actions were composed of the pus from the abscess which had pointed into bowel and their contents.

On the eighteenth day of his disease patient was much improved, bowels now in fair condition, lungs clear. Pus ceased to be expectorated; appetite fair; discharged on condition that if he did not do well to call me again.

Did well for three days, when I was called again. Patient had

the night before been seized with a fit of coughing and had spit up about a pint of pus. This cough continued for seven days at intervals; fever returned; tongue coated; appetite gone again. A typhoid condition developed, patient became very weak, and on the twenty-eighth day of his disease death relieved his suffering. He died of asthenia and asphyxia.

Am I correct as to diagnosis?

Never during the case did nature show any tendency to point externally.

To what were these abscesses due?

Some months previous he had "la grippe" and suffered from a bilious condition, but took no medicine.

Were these abscesses due to the congestion resulting from the grippe and his predisposition to liver trouble, or to gall-stones?

From the symptoms, should I have anticipated abscess of the liver and lanced into it from the outside, or was the conservative course I followed correct? The liver could be detected as enlarged, but no tumor felt or outlined. After the discharge a tympanitic note was discovered over the liver.

Please discuss the case.

SOME OF THE ACCIDENTS MET WITH IN LABOR AND THEIR PREVENTION AND TREATMENT.

By W. P. Whittington, M.D., Asheville, N. C.

(Read before the Medical Society of North Carolina, at Asheville, May 26th, 1891.)

It is a lamentable fact that the opinion is abroad among the common people, and prevails to a considerable extent in the profession, that but little knowledge and less skill is acquired in the practice of midwifery. Hence we find all over the country and in our most populous and enlightened cities, men and women practicing midwifery who do not know or understand the primary principles of obstetrics. It is no wonder, then, that the field of the gynæcologist is full and the harvest abundant.

Parturition is a process of nature, and there is some truth in the old adage that "Meddlesome midwifery is dangerous." All interference with natural labor might be considered meddlesome, therefore we see how important it is that the accoucheur should be well prepared to fill the important position so that he might know when to interfere and when to let nature have its course. But when we consider the many deviations from the natural course, even in apparently natural labors, we are more forcibly impressed with the demand for educated midwives and a better preparation of the physicians in this branch of practice.

In the present (nineteenth century) a period far advanced in female folly and fashion, when the plan of nature is perverted by tight lacing and many other things detrimental to the thorough development of the perfect woman, we find many irregularities in what would otherwise have been natural labor. Two of the most common accidents that occur in so-called natural labor are laceration of the cervix uteri and laceration of the perinæum down to, and occasionally through, the sphincter ani. These accidents happen much oftener than many of our physicians are aware of. I have myself examined and treated numbers of ladies who had lacerations of the cervix and had been treated by other and older physicians who had failed to discover that they had these lacerations. These physicians, either from carelessness or ignorance, failed to recognize what was really a very plain condition. The

country is also full of ladies suffering from year to year with lacerated perinæums, who have been taught that the injury is no more than every woman must have who has borne children. There are two reasons why this is so: It is either on account of carelessness of otherwise competent physicians, who do not examine the patient after delivery, and therefore do not recognize that there is an injury; or, secondly, on account of inability to repair, and therefore assumed ignorance or indifference on the part of the physician. While lacerations of cervix and perinæum will occur in some cases, in spite of the best management, it is very evident where the doctor sees his patient in the early part of the labor, he can, by proper care and management, prevent nine-tenths of the lacerations that do occur. The question of importance, then, is how to prevent these lacerations.

Lacerations of the cervix are due to an unyielding condition of the muscular fibres of the cervix or to unnaturally strong contractions of the muscles of the fundus and body of the womb, aided by muscular effort and bearing down on the part of the patient. We should instruct the patient not to make any attempt to advance the first stage, but to resist any bearing-down or straining effort as much as possible. If the contractions are unusually strong and often and the os unyielding, use anæsthetics. Of these, morphia, chloral hydrate and belladonna are the best. A full dose of morphia hypodermically will often render strong, ineffectual pains milder and more effectual. Chloral hydrate in 30-grain doses per rectum, repeated in one hour or less, is often of much benefit. Fluid extract of belladonna, given until the pupils are dilated, or the solid extract smeared over and around the os are recommended, but it is more effectual and less dangerous by the mouth, in small doses often repeated, or one full dose may be given at once. If small doses are used, they should be suspended as soon as the pupil begins to dilate. Abundant vaginal douches of very warm water will sometimes aid the dilation of a rigid os, and usually render the perinæum more flexible and yielding.

If careful attention was given to the above suggestions I am sure there would be a great many less lacerated wounds, and consequently much less suffering among the women of the present day. In the management of the second stage of labor our physicians and midwives are guilty of some of the same mistakes as in the

first. The busy practitioner who is overworked and pushed for time to fill engagements already made, is too apt to become impatient and give a dose of ergot, make pressure over the fundus and encourage the patient to bear down with all her might, and failing to properly conduct the head through the vulva the perinæum is ruptured.

As I have before stated, lacerations will occur, but a large majority should be prevented by proper management. When the labor is extraordinarily hard and likely to be precipitate, the patient should be encouraged to resist the bearing-down tendency as much as possible, and not allowed to grasp anything with the hands at all. Where the perinæum is hard and unyielding, cloths wrung out of hot water and applied continuously will render it soft and more yielding.

It is in the second stage of labor that chloroform plays so important a part, not only in preventing lacerations of the perinæum, but in lessening the suffering of the patient. In the early part of the second stage chloroform should be used only during the pains; but later, as the head is emerging through the vulva, it should be pushed to such an extent as to suspend all violent efforts on the part of the patient and allow the head to be expelled by the natural contractions of the uterus as far as possible. Antipyrine and cocaine have been used lately to relieve the suffering during the second stage, but on account of the large size of the dose and the derangement of the stomach antipyrine has been abandoned.

Cocaine may be applied to the mucous membrane of the vagina on pledgets of cotton or injected under the labia, but is not equal to chloroform, which should always be used where there is no contraindication.

Besides the means already mentioned, much can be done by properly supporting the perinæum and restraining the progress of the head until the parts are properly prepared for its exit.

This, I think, is best performed by letting the soft ulnar part of the hand rest over the perinæum and the thumb and index-finger rest on the head as it protrudes through the vulva. We can thus give the head any forward motion necessary to utilize all the space under the pubes, and at the same time restrain it and prevent its expulsion during the acme of the pain.

After the termination of the third stage a careful examination of

the vulva should be made, and if there is a laceration of any extent it should be repaired at once, unless the patient is very much exhausted, when it may be delayed a few hours. I will not take time to discuss the various methods of repairing the perinæum, for a little mechanical skill with a correct knowledge of the anatomy of the parts, will be a sufficient guide to a successful operation. Silk, silver, or catgut may be used. The continuous catgut suture has been used very successfully by several surgeons during the last year. Two or three interrupted stitches with silk, if the knees are kept together, will usually secure the restoration of all incomplete lacerations. Those extending through the sphincter ani of course require more skill and care in their treatment.

Beside the accidents already referred to the obstetrician will meet with more serious conditions occurring in mal-presentations, faulty positions, placenta prævia, extra uterine pregnancy, post-partum hemorrhage, etc., which require cool, courageous and prompt action, and are too numerous and of too much importance for discussion in a paper like this.

In the treatment of extra uterine pregnancy by electricity Drs. Janvrin, Bache Emmett and C. C. Lee, report cases of expulsion of the fœtus by the uterus in tubal pregnancies after the application of the galvanic current. In post-partum hemorrhage the use of iodoform gauze as a tampon for the uterus has grown very popular during the last year.

In conclusion, I wish to say that in the practice of obstetrics the application of the aseptic and antiseptic methods are of as much importance as in surgery. In the application of the first we would suggest plenty of good soap and hot water, well applied to doctor's instruments and patient. In the second we may use carbolic acid bichloride, salicylic and boracic acids, etc., as the nature of the case demands.

24 Montford Ave., Asheville, N. C.

A PLEA FOR THE MORE GENERAL USE OF CHLOROFORM IN NON-OPERATIVE CASES OF LABOR.

By J. Howell Way, M.D., Waynesville, N. C.

(Read before the Medical Society of North Carolina, at Asheville, May 26th, 1891.)

Since that eventful day in the history of our forefather, Adam, when the voice of disobeyed and angered Divinity proclaimed the curse "in sorrow shalt thou bring forth children," and woman mournfully went forth from the enchanted garden to fulfil in pains, supremest anguish, that command, no event of greater importance has occurred in obstetric history in my opinion, than the use of sulphuric ether in annulling the pains of parturition by Sir James Simpson at Edinburgh on January 19th, 1847.[1] And while more than two-score years have passed since then, and the amount of time elapsed, surely sufficient, for the first wild outbursts of enthusiasm, and the inevitable reaction of dissatisfaction with which the much-vaunted claims attendant on the introduction of all new remedies or therapeutic procedures are attended, to have alike subsided, and the true value of anæsthesia in labor established upon a rational basis recognized as such, accepted and practiced by the profession throughout the whole civilized world, it does not seem that such is the case.

Now, as regards the use of anæsthetics in cases of operative midwifery, there is but little, I might say no, divergence of opinion. The indispensability of chloroform or ether in certain cases of version, in craniotomy, and in other of the major operations of midwifery, is at once recognized and readily admitted by medical men in all countries; but when we approach the study of anæsthesia in cases of non-operative obstetrics, we find a variation of opinion and of practice that really seems surprising when it is remembered how long the claims of these agents have been before the profession.

Now, in the presentation of this subject to you to-day, it is impossible, as well as undesirable, that the uses of anæsthesia in labor be treated of minutely, or even in a general way, as regards all of the classes of cases in which it may be of service; but it is the purpose of this paper to specially direct your attention to a brief

consideration of anæsthesia in cases of non-operative or natural labor, as they may be termed. I must confess, in the outset, to a forced use of the term natural labor in this connection, because, strictly speaking, I do not believe that many cases of normal or natural labor are met in practice at the present day. The refining and enervating influences of modern civilization are such that the majority of mankind have their existence under abnormal conditions. The more delicate and sensitive organization of woman responds to the impress of these influences in a more marked degree than that of man, hence we reasonably expect, and in practice find, the process of parturition in the civilized female attended with a degree of suffering infinitely far beyond that endured by the women of primitive peoples.[2] So, truthfully speaking, the non-operative or ordinary cases of labor we treat are not cases of natural labor, but cases of labor the subjects of which have, through the influence of environment, heredity, etc, had their nervous systems o modified from the primitive, the natural type, as to render them incapable of undergoing the throes of parturiency with only the pain experienced by the women of primitive peoples.

As determining the extent to which anæsthesia is resorted to in non-operative cases of obstetrics at the present day, permit me to cite the testimony of some of the most authoritative writers on the subject. The scholarly Parvin, writing on this point,[3] after commending the use of anæsthetics, and further indicating the preference of most physicians for chloroform in obstetric practice, and the reasons therefore, says :

"Chloroform has not been generally adopted, nor has it been entirely abandoned in obstetric practice * * * It is certain that the great majority of women in the United States endure the martyrdom of maternity without anæsthesia."

Vernier and Pajot[4] state that—

"In France chloroform has met with great opposition. * * * In Paris, apart from operations for which chloroform is generally used, anæsthetics are not employed except in very rare cases."

Dutertre[5] gives similar testimony relative to the French practice, thus :

"After this long controversy and presentation of observations, the administration of anæsthetics in natural labor is not established

in France. It is to-day condemned by the teaching officials of that country."

Reese[6] says :

"In the leading text-books of that country (Germany) anæsthesia is advised for all operations, and under special circumstances, but generally rejected for natural labor."

Lusk[7] gives as his opinion that—

"Few practitioners give themselves the trouble to master the necessary *modus operandi* of the use of anæsthetics to study the limitations of their usefulness or to learn the conditions of their safe administration."

Truly a sweeping charge is this, but one the truthfulness of which I have little doubt the facts will fully sustain !

J. C. Reeve, than whom, I presume, no American since the days of Channing has given the whole subject of artificial anæsthesia, in all its various methods and details, more careful and pains-taking study, or who is better prepared to give an unbiased opinion on this topic, writes[8] as follows :

"And now, it is believed, there is not such a general resort to anæsthetics in natural labor as so great a boon to suffering humanity deserves, or as is consistent with the second great object of the profession—the relief of pain. * * * A good deal of this must be attributed to the very strong conservatism manifested by some of our leading teachers, and still more, perhaps, to a lack on the part of the profession of that careful study so important a subject demands. * * * The general neglect of the method is to be deplored alike in the interests of the profession and of humanity."

The rational use of anæsthetics in labor is based upon a careful study of the physiological effects of such agents and of the natural phenomena of labor. Usually the first effects[9] of a moderate administration of any anæsthetic is an increase in activity of all the bodily functions—in labor often the uterine contractions are also increased in rigor and frequency as well. Following this period of general stimulation comes one of progressive paresis manifesting itself first upon the lower portions of the spinal cord, and gradually extending its influence over the dorsal and cervical portions, and finally, when the anæsthesia is carried to an extreme degree, affecting the centres of the medulla oblongata, with resultant abolition of those reflex actions dependent upon the stability of the

basic cerebral centres, respiration and circulation, and death ensues. In surgical practice and operative obstetrics, it is necessary that the use of the anæsthetic be carried to the point of abolishing the functions of all the nerve centres save those at the base of the brain, in which reside the influences controlling the functions of vegetative life. In the use of anæsthetics to annul the pains of parturiency, obstetric anæsthesia, as it is termed, it is very rarely, if ever, necessary, proper or advisable to carry the anæsthesia to the extent necessary for the performance of a surgical operation. A misunderstanding on the part of many physicians as to this point is doubtless responsible for the anguish endured by many a parturient who otherwise would have her pains greatly ameliorated, if not entirely annulled.

Obstetric anæsthesia is one step in anæsthesia; surgical anæsthesia is another step in the same process, but far in advance of the former in its physiological impression as well as in its dangers. In the one the anæsthetic is administered only during the continuance of the pains, and is given only to the extent of annulling the sensibilities so that impressions of pain are but dimly felt. The patient regains her consciousness usually during the intervals or at the beginning of a pain, and at all times, if spoken to loudly, will give some indication of recognition. Yet she is almost, if not entirely, free from those pains which Hodge, with a degree of obstinacy born of a prejudice unworthy the mind of so great an obstetrician, while refusing to give chloroform for their relief, describes the condition of the woman enduring them as being "agonized and semi-delirious."[11]

In the other, or surgical anæsthesia, the administration of the anæsthetic, instead of being an intermittent process and carried only to the point of inducing partial anæsthesia, is a continuous and regularly progressive process carried steadily onward to a definite point, where all of the functions of life, save those of respiration and circulation, are silenced under its deadening influence.

As touching the choice of agents for the induction of obstetric anæsthesia, it is scarcely necessary to mention that almost every argument to be made on the subject is in favor of the use of chloroform as preferable in every way to all other agents. Its small dose, its pleasant odor, the absence of need for any special appa-

ratus for its administration, its non-inflammability, and last, but by no means least, the readiness with which its influence can be controlled, all speak loudly in its favor. Every one familiar with its use in obstetric practice will readily recall how often a single inspiration has relieved, or, as women sometimes express it, "taken the edge off" a pain. Ether has been urged in some quarters as being safer, but there is no evidence whatever to support such a claim. This is probably due to the prejudice existing in a certain section relative to the use of chloroform in surgical practice, and, in all probability, like most of the prejudices the human family possess, has ignorance as a basis.

There have been recorded up to the present time between five and six hundred deaths from chloroform and between one and two hundred from ether in surgical practice. This disparity in numbers of deaths, however, is by no means positive evidence of the lesser danger, even in surgery, of ether, because, when we consider the whole civilized world, and the anæsthetic in use in different countries, it is at once apparent that chloroform is given far more frequently than ether.[12]

Chloroform has now been given in labor hundreds of thousands of times, and I have been able to find in the literature at my command records of only six deaths. Only one of these occurred in the hands of a medical man; the other five were cases where the anæsthetic was either taken by the woman at her own instance, or else given by an ignorant nurse.[14] And in the single recorded case (the Harrison case, in Chicago, in 1881[15]) of death in the hands of a competent medical man, there lacks post-mortem confirmation of the cause of death. There was no autopsy held and the symptoms pointed strongly to embolism of the pulmonary artery, and not to the chloroform, as the cause of death.

The cause of this remarkable immunity of women in child-birth to the influence of chloroform must be sought for, in part, in the intermittent method of its administration, but largely, in my opinion, to the utter and complete absence of any dread of the anæsthetic, the existence of which all surgeons recognize as tending to induce an emotional state which depresses the heart and circulation. The influence of the uterine contraction upon the circulatory system in antagonizing any tendency to cerebral anæmia must also

be regarded as of importance, intending to counteract a possible evil effect of chloroform.

When it is remembered that sudden deaths may occur during labor as well as at other times, it is a mater of surprise, as well as of congratulation, that there are not a greater number of sudden deaths during labor where chloroform was administered. While, as with any other drug, personal equation, idiosyncrasy, or other causes, may, and perhaps do, at times, modify the action of chloroform upon the progress of labor, it will, I think, be generally conceded by those familiar with its use in obstetric practice, that the course of labor is not only in no way, as a rule, interfered with, but in many respects materially aided by the use of chloroform. The uterine contractions are usually increased in force and frequency immediately after beginning the inhalation. Occasionally the reverse effect is observed, and rarely to an extent that would demand the withholding altogether of the chloroform, or, as suggested by Sansom,[17] making use of some of the combinations of chloroform with alcohol and ether. After the patient is under the influence of chloroform, given only to the extent of inducing obstetric anæsthesia, I do not believe that it exercises any special influence on uterine contractions, either as tending to increase or diminish their activity. Of course it is to be remembered that, if carried to a degree beyond the limits of obstetric anæsthesia, it will certainly impair the force of uterine contraction.

This is also true as regards the accessory muscles of parturition called into action during the expulsive stage, though with reference to the latter it may be noted that the instances of post-mortem and extra-corporeal delivery of the fœtus amply proves the capacity of the unaided uterus to empty itself.

Upon the os and cervix the beneficial effects of chloroform are well displayed in softening and relaxing them when their rigidity delays the progress of dilatation; but for this porpose, unless there exists some special reason for the use of chloroform, it is preferable to accomplish this result by the agency of chloral, as recommended by Playfair.[18] By inducing a relaxation of the tissues, by preventing those abrupt violent movements made by women in their extreme agony at this time, by lessening, and when carried to a deeper extent, preventing expulsive effort, and thus showing the progress of the head, giving the tissues more time to recede behind

it, chloroform is, in the opinion of Reese, more efficient than any other single measure in the prevention of rupture of the perinæum.

As upon various other questions relating to this subject, there has been everything save unanimity of professional opinion as to whether or not the use of chloroform increases the liability to post-partum hæmorrhage. Forty years ago the affirmative view of this question by men like Tyler Smith and Robert Barnes carried great weight with it, and did much to shape a medical sentiment that even we to-day feel the weight and influence of. For it would seem very reasonable, indeed, that an agent which paralyzes sensation and carried a little farther destroys the power of voluntary muscular action, would inevitably arrest that firm muscular contractility so essential in preventing hæmorrhage after delivery. This question as to the relaxing effect of chloroform on the contractility of the uterine muscular fibre immediately after delivery, is, I think, identical with the question of its influence on its contractility prior to its delivery. Its action is determined solely by the amount of and extent to which it is administered. If it be carried only so far as to annul sensation, and near the close of the expulsive stage, to restrain voluntary muscular movements, it will not, it cannot cause post partum hæmorrhage. But if given to the point of influencing the contractile power of the involuntary, or striated muscular fibre, it will assuredly favor hæmorrhage. Hence it is certainly incumbent upon every physician who administers chloroform in labor to bear this fact in mind, that he may be cautious in giving no more than is requisite, and guarding against any tendency to hæmorrhage. The duration of labor will not, in ordinary cases, be lengthened by the proper use of chloroform. If given to the extent of rendering inefficient or retarding uterine contractions, it will undoubtedly lengthen the duration of labor, and perhaps necessitate the application of the forceps, as well as predispose to post-partum hæmorrhage. But properly administered by a competent medical man who has carefully studied the *rationale* of its effects, and is thus fully prepared to accomplish the induction of just the extent of anæsthesia desirable and no more, none of these inconveniences and dangers need be feared.

Fordyce Barker, a most excellent authority upon puerperal diseases, in a recent paper[19] writes as follows :

"During the past thirty-seven years I have rarely attended a

woman in confinement without the use of chloroform—never when she suffered considerably. Having thus used it in several thousand cases, I unhesitatingly assert that not in a single case have I ever found reason to regret its use. * * * In my private practice I have never had but one case of post-partum hæmorrhage, and in this no anæsthetic had been used, as the child was born within five minutes after I entered the room, before I had time to make any examination, and a terrific flooding followed."

The proper administration of chloroform in labor does not exert any influence upon the child. Upon the puerperium it not only exerts no prejudicial influence, but almost every woman who has been confined without chloroform and at another time with it, will invariably assert that after labor with chloroform she was decidedly less fatigued and more free from muscular soreness and lameness than after a labor without it.

The method of the administration of chloroform is a matter of important consideration and deserving of the most careful study on the part of the physician who essays its use in obstetrics. As has already been shown by the extracts quoted from the writings of some of our most distinguished teachers, a neglect of the necessary study of the method by the rank and file of the profession is doubtless responsible for the fact that the large majority of women suffer, unaided by anæsthesia, the anguish incident to maternity. In an examination of some ten of our most modern text-books on midwifery in my library in only one[20] did I find that thorough and careful consideration, even to the minutest matters of detail, that a subject fraught with so great a power in the relief of suffering woman, deserves at the hands of gentlemen who would write books for our guidance. This defect, I regret, it is not within the power of the present paper to supply, time only permitting notice of some of the more important points.

During the first stage of labor chloroform is not usually indicated until near the close, when the process of dilatation is pretty well complete. An exception to this rule, however, must be made in certain labors of primipara in which the pains are unusually painful, the os dilates slowly, and tired, worn-out, and disheartened at the slow progress made, and the continuance of labor which she had hoped would have been ended hours before, the patient grows very nervous and intolerant of the pains. In cases of this type a

few inhalatinns of chloroform will often exert a most happy effect, both upon the mental and physical condition.

There is also another class of cases where the os is firm, rigid and unyielding in the first stage, and the uterine contractions seemingly productive of little result save that of fatiguing the patient, where chloroform does excellent service.

Generally speaking, chloroform is to be reserved until dilatation is nearly or quite completed and expulsive pains set in, both of the above classes of cases usually responding readily to chloral, which is the preferable agent at this time and for this purpose. A small cup shaped sponge, easily carried in the obstetric bag, and when wanted for use dipped in hot water and squeezed as dry as possible, and a handkerchief closely wrapped around it, leaving the concave side exposed, constitutes perhaps the best arrangement for the convenient, safe and economical administration of chloroform. The anæsthetic should preferably be in a bottle permitting the escape of only small quantities at a time. Regard for the temperature of the room should be had in its administration, the physical fact being borne in mind that an increase in temperature of 20° F. doubles the chloroform-containing capacity of a given bulk of air. At the onset of a pain fifteen or twenty drops should be dropped upon the sponge, it being squeezed together to insure its general diffusion through its texture, and then held in front of the patient's nose. During the continuance of the pain it is inhaled freely; as soon as it dies away it should be withdrawn until the next pain comes on. With each pain chloroform is inhaled, always taking care to discontinue it between the pains, so that the effect, until the head lies low in the perinæum, shall always largely die away during the intervals between pains. Close attention, scrupulous care and a nice discrimination are to be exercised by the administrator at all times, that he does not cause the patient to inhale an unnecessary amount, and thus cause this two-edged sword to cut for evil instead of good. The effect of the anæsthetic upon the patient's uterine contractions, their force, frequency and regularity, upon the respiration and circulation, the extent to which relief from pain is afforded, and her general condition as well are all matters of detail to be carefully looked after as the case progresses—now diminishing, again withholding altogether for a short time the use of the anæsthetic, never carrying its influence so far as to suspend

consciousness until just as the head is being born, when it will often be advisable to give it to the extent of completely destroying consciousness and all perception of pain. After the birth of the head the administration of the anæsthetic should cease.

No assistant is necessary in using chloroform in ordinary cases of labor, though when the amount of fatigue its careful administration entails upon the physician is considered, he who uses it frequently will almost wish an assistant was deemed essential, as its use renders the duties of the medical attendant much more exacting and tiresome than in cases where no anæsthetic is given.

As regards the contraindications to the use of chloroform in labor it may be stated in general terms that the same principles guiding us in its surgical use should also in a measure influence us here. Organic disease of the brain is of course rarely met with in parturient women. Likewise advanced or serious disease of the pulmonary tissues are not very frequently met with in connection with labor, and even when seen I feel sure the suffering and exhaustion incident to labor without chloroform would be a far greater tax on the patient's vital organization than would follow the careful administration of an anæsthetic. Functional disorders, either of brain, lungs or heart, are not to be considered contraindications. Organic diseases of the heart, unlike those of the brain and lungs, are not infrequently met with in obstetric cases. Yet, of the various types of organic heart disease, fatty degeneration alone contraindicates the use of chloroform; practically, the diagnosis of this condition must necessarily only be presumptive, hence the cases where this point will demand consideration are very rare indeed, and even if strongly suspected to be present, it would be safer, after having conveyed to some of the patient's family, as would be advisable in all cases where any organic disease is present and chloroform is given, a knowledge of the patient's condition, to carefully proceed with the anesthetic.

Upon the question of the use of chloroform in labor cases complicated by organic heart lesions there is possibly more unanimity of professional opinion than upon almost any other question bearing upon the subject. McDonald, who has devoted a volume to the study of organic heart disease in its relations to pregnancy and labor, states[22] that "in almost all the cases of heart disease with labor I have met with, chloroform has been given, and apparently

with benefit, during delivery. If carefully administered I think it cannot but be useful in all cases."

Fordyce Barker[23] says that disease of the heart, lungs and kidneys is an additional reason for the use of chloroform in labor, believing that the vital powers are saved rather than exhausted by the anesthetic. Pasin

~~Pasin~~[24] does not regard organic lesions of the heart as necessarily contraindicating the use of chloroform in labor. As regards kidney affections, the great value of chloroform in puerperal eclampsia would be, I think, sufficient evidence that renal disease is no contraindication to its use in labor. Upon the whole, given a woman in labor suffering great pain, there are no circumstances that ought to prevent her having her pains assuaged by the careful administration of chloroform if she desires it. And while I would not seek to inculcate the dogma that every woman in labor must have chloroform given her, it is my honest conviction that in the rank and file of the profession living in the smaller towns and in the country, we do not resort to its use with that frequency which a careful and studious consideration of its merits and a conscientious desire to alleviate unnecessary human suffering would warrant our doing. Every case of labor does not demand it. There are some women, more particularly in the lower walks of life, where muscle and bone predominate over men, in whom the process of parturition is attended with more effort than pain, some others whose labors are of very brief duration, and a very few others who seem to suffer very little in labor; in these cases the use of chloroform may be very properly omitted. However, in the vast majority of women when enduring the anguish, as Mrs. Browning has touchingly described it, of

> "The hour
> When the vail of the body we feel
> Rent round us, while torments reveal
> The motherhood's advent in power,"

those agonizing pains should ever be, in my opinion, alleviated by the administration of chloroform, feeling sure in the careful use of it there lies no danger, and that we are doing all that lies in our power to relieve the distress of a class of our patients, more appreciative and grateful for relief afforded than all others, who, for

peculiar reasons, appeal most strongly for relief to our chivalrous, as well as our professional, sense of duty.

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1. Posthumous works of Sir James Simpson, Vol. II
2. Labor Among Primitive Peoples—Engelman.
3. Science and Art of Obstetrics—Pasim; second edition.
4. Hand-Book of Obstetrics—Verrier and Pajot; English translation by Partridge.
5. *De l'emploi du chloroforme dans les Accouchements Naturels.* Dutertre (quoted by Reese, Am. Syst. Obst.)
6. Am. Syst. of Obstetrics; article on "Anesthesia in Labor," by Reese.
7. Treatise on Obstetrics—Lusk.
8. Reese, *op. cit.*
9. Artificial Anesthesia and Anesthetics—Leyman.
10. Simpson, *op. cit.*
11. Principles and Practice of Obstetrics—Hodge.
12. Transactions Virginia Medical Society, 1887—Hunter McGuire.
13. Reference Hand-Book of the Medical Sciences; article on "Anesthesia," by J. A. Reese.
14. Leyman, *op. cit.*
15. Leyman, *op. cit.*
16. McGuire, *op. cit.*
17. System of Midwifery—Playfair.
18. Playfair, *op. cit*
19. Transactions New York State Medical Society, 1887—Baker.
20. Am. System of Obst—Reese.
21. All authors I have at hand agree upon this point.
22. The Bearings of Chronic Heart Disease upon Pregnancy, etc.—McDonald.
23. Bulletin New York Academy of Medicine; quoted by Reese, *op. cit.*
24. Pasim, *op. cit.;* quoted by Reese.

APPENDICITIS.*

By Dr. W. C. Galloway, Annual Essayist.

(Read before the Medical Society of North Carolina, at Asheville, May 26th, 1891.)

Mr. President and Gentlemen of the Medical Society of the State of North Carolina:

I feel assured that you will pardon not only the brevity, but the lack of scientific matter and literary finish of this paper, when I express to you that I commenced and ended the work in some confusion of mind incident to breaking up an old and cherished home for a new and untried field.

As announced in the Journal, I have selected Appendicitis as the subject for discussion. This disease, described in olden times as an inflammatory tumor of the right iliac region, more recently as typhlitis and perityphlitis, has come into prominence only within the last decade. Since 1888 most of the leading journals in this country and across the water have elaborated the subject.

Druitt, in his volume, dated 1860, does not even mention it, and so good a surgeon as he certainly would have given it, at least, a passing notice, if he had deemed it worthy of recognition. Flint, in 1867, honors it with just one third of a page.

Dupuytren, September 27th, 1827, first wrote of it, not under the head of appendicitis, however, as a distinct and separate disease. During the same year Sanger Villermay also published several communications touching appendical affections. Puchett, shortly afterward, ascribed to it the name of perityphlitis. Willard Parker, as early as 1843, advocated early incision, and not only so, practised it. Oppolzer, about the year 1860 invented the name of paratyphlitis as an inflammation of the post-cæcal connective tissue. Kraussold, in 1881, boldly advocated the plan of early incision practised by Parker. Possibly there are some voluminous articles upon the topic previous to 1879, but in my researches I have found none. In 1881 Flint gives it not quite four pages. Loomis gives it five pages in his volume of 1884; Pepper nine pages in 1885; Gerster fifteen and Wyeth three and a half pages in 1890.

*For discussion on this paper see p. 48.

Dr. Samuel Loyd, of the Post-Graduate Medical College, kindly sent me this year's April number of the Annals of Surgery, edited by Pilcher and Keitley, published in St. Louis, and to it I am largely indebted for new and varied matter.

From the early days of medical science until the advances made by Sims, Tate, Batty and others in abdominal surgery, the invasion of the peritoneum was looked upon in holy horror. It is said that the Indians aimed their arrows at the abdomen of their adversaries in battle, because experience taught them that, if the wound did not prove momentarily fatal, death usually followed in the course of a few days.

As the forests and rude huts give way to beautiful parks and magnificent cities before the steady and onward march of civilization, so the barriers of surgery are broken down and cleared away before the tireless and resistless sweep of pathological investigation and the cool, practised hand of the painstaking, accomplished surgeon. If there is no new thing under the sun, what in us is dark is certainly being wonderfully illumiminated.

As progress is the watchword in education, arts, etc., so it is in medical literature. No Lot's wives are tolerated in our time. We must keep in the current of the stream of improvement or look backward and die, or hibernate in blissful desuetude. The lighthouses along our coast guide our bold, sturdy mariners into ports of haven, and thereby prevent many shipwrecks. In like manner the great pioneers in our special field keep the lower lights burning that we may follow in the interest of humanity.

To Reginald Fitz, Gurdon Buck, L. A. Stimson, Charles McBurney, and several others, the profession owes a lasting debt of gratitude for their achievements in appendical surgery. Possibly McBurney has done more than any other surgeon to clear up the mists shrouding the vermiform deathtrap.

One-third of our entire adult population is said to have appendicitis at one time or another. Many are carried off yearly by it, and, no doubt, numerous cases go to "that bourne from whence no traveler returns" afflicted with this disease under a mistaken diagnosis. To show its ravages, it is only necessary to quote the following statistics :

Voloz	49	cases,	39	deaths.
Bamberger	73	"	18	"
W. T. Bull	67	"	33	"
Matterstock	70	"	49	"
With	30	"	12	"
Demme	36	"	27	"
Total	325		178	

The above statistics show a death-rate of little over 54 per cent. Older writers put it at 80 per cent. Under the opium treatment there has been a reduction to 30 per cent.; yet Bull's cases were reported in 1872, without operation, with a mortality of 47½ per cent. The number of deaths among children is greater than in adults. Any mode by which such a high mortuary report could be reduced meet our warmest approbation. Noyes, of Providence, mentions 100 cases in 1882, with operation, of whom only 15 died. As the disease becomes better understood the deaths diminish. McBurney, in his *early* laparotomies, has met with such phenomenal success, and has made the way so clear, that all of the doubting Thomases ought to take a journey to see the belly wounds and be convinced. He reports, in 1891, 24 operations. In all but 1 life was seriously threatened; 21 were males, 3 females; all were under 36 years of age. The appendix was completely removed in 22 of the cases. Partial removal was thought to be sufficient in 1, and in another removal was deemed unwise. All recovered but 1—a mortality of little over 4 per cent.

McBurney believed that, had the operation not been delayed in the patient who died, it would have been successful. Six cases were operated upon on the second day, 14 on the third day, 2 on the fourth day, and 2 at the end of one week.

Previous to the researches of Fitz, McBurney, Keen, Stimson and a few like seekers after the truth, the pathology of appendicitis was obtained principally through the channel of post-mortems, but, happily for mankind, these gentlemen, by their investigations upon the live subject, have demonstrated facts, hidden by long years of ignorance, which cannot fail to lessen the mortuary list in appendical disorders.

Statistics go to prove that males are more often attacked than

females, and it occurs more frequently between the ages of 10 and 40; therefore this disease chiefly affects the bloom of life.

We might, I think, discard the old names of typhlitis, perityphlitis, paratyphlitis and extra-peritoneal abscess of the right iliac fossa, as they all originate almost exclusively from disease of the vermiform appendix.

Idopathic peritonitis, if it occurs at all, must be extremely rare; and, excluding that which arises in females, the vast majority of such cases may be traced to inflammatory processes in the appendix.

There are three varieties of appendicitis usually described :

1. Peritonitis appendiculoris adhesion, in which adhesions form in the peritoneum around the appendix.

2. Peritonitis appendiculoris localis, characterized by local peritonitis and primary abscess.

3. Peritonitis appendiculoris universalis or diffusion in which the general peritoneal cavity becomes involved.

The diagnosis is usually not difficult to make. Abdominal pain, of greater or less acuteness, is generally the first sign of approaching appendicitis. It may be referred to the whole abdomen, often to the epigastrium alone, and occasionally to the umbilical region. Only in about half the subjects does it commence in the right iliac fossa. After several hours, or may be a day, generally not longer than a day, the seat of pain is centred chiefly in the iliac region, when a correct diagnosis is easily arrived at. Some very few cases begin with a feeling of uneasiness or discomfort in the abdomen, which lasts several days before real localized pain is announced.

McBurney has given us a valuable diagnostic sign of pain elicited by firm pressure with the finger-tip at a point in the adult 1½ to 2 inches from the anterior superior spinous process of the ilium, on a line drawn from that point to the umbilicus. In children it may be found at a less distance, according to age. This sensitive spot is sometimes found a half inch or so nearer the pubis, or the area of sensitiveness may be a little enlarged.

From the first hours of the disease up to several days this sign may be clearly made out in *every case.* There is no other disease that presents this fixed and certain diagnostic feature; it therefore may be taken as pathognomonic. The accuracy of this sign has been demonstrated by McBurney in evey case operated upon by him. The painful point is just over the *base* of the appendix, and,

for that reason, it is clearly defined whether the appendix is long or short, or points up or down.

In the late stages this sign is seldom found. A chill may mark the beginning of an attack, and vomiting is sometimes severe. In other cases one or both of these symptoms may be absent.

Except in very mild cases fever is present, which usually ranges between 100° and 103½°. Rigidity of the right abdominal muscles is quite constant. During the first day tympanites is nearly always present, and it may be slight or decided; but it may be entirely wanting in some cases of great gravity. As a rule, however, rapid and increasing distension is the forerunner of early dissolution. Within the first two days a tumor may or may not be felt. The appendix, when enlarged, may be recognized at a very early period. No tumor can be appreciated in the extremely mild cases, but, with rare exceptions, it can be detected by the third day.

The tumor consists of the enlarged appendix, or the appendix surrounded by thickened omentum or inflamed œdematous intestine, and may or may not contain pus. Percussion elicits dullness generally, but a tympanitic resonance may sometimes be noted when a portion of gut, distended with gas, lies immediately over the tumor. Coughing and over extension of the right leg give pain. Careful examination of the pulse is always necessary, as it expresses, uniformly, the amount of constitutional disturbance going on.

It will be seen that very signs are constantly present in the first twenty-four hours. Point pressure, sensitiveness over the base of the appendix, fever, accelerated pulse and rigidity of the right abdominal muscles are the most constant and reliable signs in guiding us to a correct diagnosis. Sensitiveness to pressure, as described, may be the only symptom in very mild cases. The use of the hypodermic needle or the aspirator is deemed inexpedient and hurtful. Seldom is anything gained by an examination of the rectum.

Pain alone is no indication of the gravity of any given case. In reference to treatment, an early diagnosis is of the utmost importance. During the first twelve hours there will be a great similarity of symptoms in many cases which undergo various changes as the disease progresses. Some may have intense pain with high fever, a deeply furred tongue, anorexia and vomiting, and are at once prostrated. Others will go about with little discomfort, nearly free

from pain, with scarcely any or no fever, and pulse but slightly accelerated. Others, again, with no specially marked symptoms, will refrain from moving about because motion increases pain, and when they remain quiet they are fairly comfortable. Some, commencing with a chill, will have flushed face, a bounding, rapid pulse and high fever. All cases are important and should be seen often and carefully watched, because there is the beginning of an inflammation within the peritoneal cavity that cannot be immediately prognosticated, and time alone can inform us of results. We, however,, shall not wait long, for in the course of twelve or twenty-four hours many changes will take place which will determine our course of procedure. All of these demand absolute rest. Bland nourishment only should be administered. Anodynes should be used sparingly, but in sufficient quantity to give rest and comfort, if necessary. Vomiting should be promptly controlled. At this stage laxatives and enemas should be forbidden. Cold should be applied in some form over the inflammation, and for this purpose nothing is better than the India-rubber cold coil. Such a plan will frequently succeed in mild cases, and, right often, relieves those of a severer type, while others will go on from bad to worse.

When perforation takes place early, pain for awhile is distressing, and there is shock, more or less marked, followed by chill or fever, or both, extended pain, rapid pulse, vomiting and tympanites. Here we have the beginning of septic peritonitis. Perforation by fecal concretion, foreign body, or pent-up pus, may take place late in the disease, and, if adhesions have formed, throwing out a wall of protection, no special signs announce themselves, and usually an abscess results. Again, perforation may not occur at all, but pus may rapidly form, and, if adhesions do not exist, or exist imperfectly, so as to allow the pus to escape into the general peritoneal cavity, the signs of peritonitis will immediately supervene.

Perforation, with marked peritonitis, may take place within the first twenty-four or thirty six hours, but mild cases, for the same length of time, may begin to improve. To be positive in regard to many points of the utmost importance we must wait, but not too long, for, if we remain, as it were, "supinely upon our backs, hugging the delusive phantoms of hope" for six or eight days, many serious and momentous questions will be solved, because many of our patients will have died.

Fitz records 176 cases of perforative inflammation of the appendix. Sixty died by the end of the fifth day, 46 by the end of the fourth day, 28 by the end of the third day, and 8 on the second day. The cause of death on the third, fourth, fifth and sixth days is sepsis commonly, and fatal sepsis generally sets in, according to McBurney, from whom I have largely quoted, by the end of the third day.

When, then, should we perform laparotomy? Certainly before sepsis has begun, which will soon render the use of medicine a farce and an operation little better than an autopsy.

Would an operation be advisable on the first day, in order to avoid all subsequent danger? Nay, verily. Mild cases are quite numerous, and usually recover with the previous treatment laid down. Each case must be a law to itself.

If, in a given case, nausea ceases within twelve hours and tenderness on pressure has not increased, if the temperature remains normal, or nearly so, if the pulse is natural or but little increased, and if the patient moves in bed with ease, an early recovery may be anticipated. If, at the end of twelve or fourteen hours more, the symptoms remain the same, or there is but little change, the chances of recovery are improved. If, in two more days, no tumor has formed, and the general condition is better, the patient may be pronounced convalescent; but rest in bed should be enjoined for several days. At this stage of the trouble an enema sometimes hastens the cure. In other cases the disease is more grave. The fever will reach 102° in a short while, the pulse will be quick, nausea distressing, and the face becomes more anxious, yet these symptoms will not increase, and at the end of the twenty-four hours the general condition may be such that the mild treatment may be continued. Twelve hours more of waiting will develop improvement, or may be no change, or a worse condition. If better, treatment will be continued; if no material change, the same remedies will be used until the patient can be seen again, which should be done in a few hours. If the symptoms have become more pronounced, then an operation should be considered.

In all of these cases, which, at the end of thirty-six or forty-eight hours from the commencement, show decided indications of increasing disease, laparotomy for the removal of the appendix should be performed.

It is quite impossible to tell the signs of "impending perforation." If we wait for spreading peritonitis or the bursting of an abscess into the peritoneal cavity with marked tympany of the belly, we may operate with the happy assurance of a death soon to follow. By the end of thirty-six hours, sometimes earlier, the question of operation should be deliberately debated. After that time clear signs of advancing disease demand the surgeon's knife. Experince, always our best guide, has fully demonstrated the fact that there will be little danger of affecting the non-affected peritoneum in a laparotomy for the removal of the appendix. In these operations pus is frequently found in considerable quantity.

McBurney says that non-infected portions of peritoneum must, necessarily, in the course of such an operation, came in contact with sponges, instruments and fingers, and yet infection of the general cavity from such a source has not, in his hands, occurred in a single instance. The operation is a serious one and frequently difficult to perform, and only a good surgeon should undertake it. Of course every antiseptic precaution should be taken.

Before an operation is begun all the necessary instruments should be on hand, such as scalpels or bistouries, or both, artery forceps, scissors, retractors, needles, aneurism needles, etc., sutures, silk and catgut drainage-tubes, sponges, iodoform gauze, adhesive plaster, bandages, prepared bichloride and carbolic solutions, towels, etc.

The steps usually taken in the early stage, or after repeated attacks during the time of quiescence, is as follows: After anesthetization the patient is placed on his back on a narrow table. The lower limbs and chest are wrapped in a blanket or warm covering and the abdomen left exposed. Rubber sheets may or may not be placed over the blanket and turned under. If used, they should be dipped in a bichloride solution. The abdomen being shaved, is scrubbed with soap and water, then with water, and afterwards with alcohol or æther. The abdomen is then covered with towels wrung out of a tolerably strong bichloride solution, except over a space sufficiently large for operative work. The operaror, after thoroughly washing his hands and arms, and having his instruments carbolized, places himself on the right side of the patient, and, beginning as high up as the umbilicus, cuts downwards four or five inches through skin and subcutaneous tissue just external to the right rectus muscle. He then divides the aponeurosis of the exter-

nal oblique for nearly the same distance. Bleeding is now arrested, and the fascia outside of the rectus is severed. The peritoneum being exposed, the upper part is pinched up and opened downward with the scissors or knife, guided by two fingers of the left hand. Care should be taken not to wound the epigastric artery and vein which lie a little to the inner side of the lower part of the incision. The small intestines are carefully pressed upward and toward the median line and held back with flat sponges and folded napkins, supported by retractors or the fingers of an assistant. If the appendix should not be visible, the cæcum is raised and the appendix is sought. If found to be free and with only normal attachments, it is raised and an aneurismal needle, armed with a double catgut ligature, is passed through its mesentery close to its base and cut in two. One is tied around the mesentery and the other around the appendix. The mesentery is divided back from its free edge with scissors to opening through which the ligatures passed. Two small sponges on handles are pressed down to the root of the appendix to absorb escaping pus, if any should be present, and the appendix is cut away close to the ligament. The sponges are held in position and the mucosa of the stump is seared with pure carbolic acid on a pledget of cotton attached to a probe, or with the Paquelin cautery. If the appendix cannot be found on account of adhesions, it should be searched for and found by palpation. A valuable guide to its base is in the longitudinal bundles of unstripped muscle on the front of the ascending colon which terminates below at the origin of the appendix. After finding appendix, it is freed from its adhesions by gently tearing them with a blunt instrument, or by cutting them, if thick, care being taken not to injure the intestines. Adhesions rarely need ligating, but should be tied if they do. The appendix, in a few instances, is found firmly united to the floor of the iliac fossa by a cord containing a small artery, which should be tied before being severed. Pus may or may not be met with in a fossa behind or to the outer side of the cæcum, or shut in by adhesions. As it wells up it should be caught on a sponge and the spot from which it flows should be thoroughly wiped out and washed with a small amount of a strong bichloride solution before proceeding to the removal of the appendix.

If the operation is done at a later period, and the appendix cannot be recognized on account of its being imbedded in, and forming

a part of, the wall of an abscess, no attempt should be made at removal, but we should evacuate the contents and keep up proper drainage.

When the abscess forms behind the lower part of the ascending colon, apparently between the layers of the mesocolon, or extends as far upward as the flank, a small opening should be made into it at its lower end, the neighboring intestines being protected by sponges and the pus removed on sponges. Likewise a counter-opening must be made in the flank above the crest of the ilium for drainage, cutting from without inward upon the finger as a guide. If the abscess extends far down in the true pelvis a counter-opening must be made through the rectum and a drainage-tube inserted to be brought out through the anus.

When there is no suppuration no cleansing will be necessary, except the wiping out of blood that has escaped the protecting sponges. If pus should escape largely into the abdominal cavity, flushing with water through a long glass tube will be required. The entire removal of the pus and complete cleansing of the cavity is not considered essential to a cure.

If no pus is found, the wound should be immediately brought together, using catgut for the peritoneum uninterruptedly, and silk for the deep and surface sutures.

If pus is discovered, the cavity should be drained with India-rubber tubing, around which iodoform gauze should be packed down to the bottom of the pus cavity. The gauze should be removed on the second or third day, but the tube should remain in some time longer. Some advise taking a stitch or two in the upper and lower ends of the wound; others to keep it entirely open for several days. When fecal concretions are present the wound should be kept open and the gauze packing used, with or without the drainage-tube.

Though I have written hastily and not satisfactorily to myself, and therefore prosily for the Society, yet, if I shall have awakened interest and thought upon this exceedingly important subject, I shall feel amply repaid for any labor bestowed upon it.

REPORT ON MICROSCOPY AND PATHOLOGY.

By A. Anderson, M.D., ~~Asheville.~~ Wilson,

(Read before the Medical Society of North Carolina, at Asheville, May 26th, 1891.)

Last year, when I was appointed Chairman of this Section, it was not known to me then, nor is it fully known yet, the great importance of this Section to the practice of medicine. Would the power were mine to make you all sensible to, and active in, this branch of our profession.

To be well acquainted with the vital phenomena of diseases in the human body is either the proud distinction of the pathologist or the goal of his ambition. The aim of the pathologist is to find out the original cause, the progress and termination of any and all diseases which he studies.

For the last decade the growth of the pathologists has been rapid, both in the proficiency of individual workers and the multiplication of the laborers.

I am impressed with the fact that during this year there has been more progress and interest in the Section I report than any previous year. It is feared that the universal discussion by the lay press of the discovery of that great leader in bacteriological work has done damage. I am glad to say that the science stands firmly upon its pedestal, and my information from the best authorities is that no well-informed man within our ranks, abreast with the times, but says: "Watch the microbe." Then let us be grateful to the All wise that the sum of this science is up and rising to the zenith "with healings in his wings."

But, gentlemen, have we not those within our ranks who, in their impatience for practical therapeutical results to them, cry out: "What good is there in all this tiresome labor?" And because it takes microscopical knowledge to open their eyes that they may see "the regular and exclusive occurrence of bacteria in particular diseases," they cry down methods and men: "Away with them, and release unto us Barabbas"—the microbe. I say unto such men: "Refrain from these men and let them alone, for if their work be false, it will come to naught, but if it be true, ye cannot overthrow it."

But the study of bacteriology has not been fruitless. We see the outcroppings of truth that have been as beacon lights to the proper selection of antiseptics. No less authority than T. Gaillard Thomas, of New York, counts antisepsis as the greatest of medical agencies inasmuch as it saves 49 women from puerperal fever out of 50 that would have gone to their graves from this fever ten years ago. What hygiene has done for civilization is most astonishing when we think of the horrible epidemics in ancient and mediæval history, raging amid the cities of the old country, lasting for thirty years and carrying to the grave nearly 100,000,000 lives.

In the early diagnosis of a single case of cholera we can by isolation prevent an epidemic. In the early diagnosis of consumption, if we cannot cure it by Koch's lymph, we stand a better chance (100 to 1) of curing by the old methods of hygiene and proper diet.

The following conclusions from Koch should satisfy any doubting Thomas as to the correctness of the germ theory :

1. That the parasite is present in every case of the particular disease under conditions corresponding to clinical causes and pathological changes.

2. That it occurs with no other disease as an accident or harmless organism.

3. That when taken from the body and artificially cultivated for a long time, it can produce the disease anew.

If these three don't prove the causal relation of parasite and disease, what more can we ask for ?

The question of immunity can only be answered by bacteriology, and while it remains yet unanswered, it is believed by Koch that we have to look to chemism rather than to the strife between cells and organisms to solve the question.

Nothing during the year has been said to disprove the assertions of Pasteur as to the efficacy of his preventive inoculations, but on the other hand many things point to the absolute demonstration of the fact that there is protection in the procedure advised by him.

Chalmogoroff finds that the umbilical cord at birth is entirely free from bacteria, and that the application of gypsum powder is the best protection for the stump.

There are three or four interesting theories upon the subject of immunity to which I wish to call your attention. That of Lounais,

that the envelope of the lymphatic gland becomes hardened by an attack of a disease, and after that infectious agents cannot do harm because they cannot enter the system through their usual portal—the lymphatic ganglia.

Buckner's theory is that the organs are left in an unsuitable condition for growing bacteria—this condition being produced by some change, probably inflammatory.

That of Grawitz, that since bacteria and body cells get their nutrition from the same places, there is consequently a fight for this nutrition. If the cells gain the victory, it is their peculiar function to transmit their victorious spirit to succeeding generations of body cells by heredity.

Bacterio-therapy is studied by Codogan-Mastermann, and his conclusions, in brief, are these:

1. That there is an antagonism between certain, if not all, bacteria.

2. That an organism cultivated in a nutritive medium renders the medium unfit for the same or other organisms to live in.

3. That the new science assumes two forms: (*a*) Bacterio-prophylaxis and (*b*) Bacterio-therapy. The first is best known and is now in successful use. The second, used in animals experimentally, "still awaits chemical sanction for its use in man."

4. "Experiments on the question of prophylaxis, conferred by substances generated by the vital energy of micro-organisms in media in which they have lived, give the key to what may be, in certain cases, the mechanism of bacterio-therapy and may foreshadow what it is destined to effect in the future."

Buckner and Nuthal have shown by their experiments the germicidal action of blood. Both freshly-drawn and defibrinated blood have a destructive influence on bacteria, and especially the pathogenic.

Much has been learned about the biology of bacteria. Uffelmann discovers that the typhoid bacillus "has a most remarkable resisting power to drying when in the stools, in some cases extending over four months." Rodet shows that it may be isolated by living after other bacteria have been destroyed at a temperature of 112° to 113° F. This bacillus, according to C. Paul, is prevented from developing by corrosive sublimate (1—20,000), sulphate quinine (1 to 800), carbolic acid (1 to 200), hydrochloric acid (1 to 100).

In case of the bacillus of diphtheria—Loeffler's bacillus has been definitely fixed upon as the essential germ—Chantlemesse and Widul state "what will most easily and effectively destroy this bacillus." The only three substances which actually checked and destroyed its vitality, were phenic acid (5 per cent.), camphor (20 per cent.), olive oil (25 per cent.), in combination.

Kitasato cultivated pus from a patient suffering from tetanus at 96 8° F. for a time, and the development was all right. He raised the temperature to 176° F., at which degree the other bacilli were killed, but the spores of the tetanus remained alive. Then by keeping these plates of spores at a temperature of 64° to 69° F. in an atmosphere of pure hydrogen, pure cultures of Nicolaier's bacillus were obtained. It takes a temperature of 212° F. for five minutes to destroy this bacillus.

Not many months ago Drs. Vaillard and Vincent made some assertions worthy of notice in connection with this bacillus. They say that the essential poison which produces tetanus develops after the bacilli have reached the stage of spores, but the spores themselves are not the poison. Nor is the poison a ptomaine, an alkaloid or base. They show that the bacillus cannot grow in the body "without the presence of another micro-organism," and therefore the disease is one of mixed infection.

Loewenthal claims to have demonstrated that salol has a toxic action on the cholera spirillum. Kitasato says in regard to this bacillus that no form of bacteria will grow in ordinary nutrient media with this germ—it being "quickly and certainly killed out: but there are some, one of which is the anthrax bacillus, that are killed by it. Uffelmann states that this germ lived four days in fæces, and that it thrives better at a temperature of 61° F. than 48° F.

There is something worthy your notice in regard to the streptococcus of erysipelas—facts obtained and thus summarized by Manfredi and Travera: "That both clinical and experimental evidence teach the extreme ease of a renewed attack of the disease; that it is possible to kill guinea-pigs by an intoxication, when they are, as a rule, immuned to an inoculation of the culture in ordinary quantities; and this fact should warn the experimenters trying to obtain immunity in man by the inoculation of non-pathogenic bacteria, because the same result may be reached—the unexpected

intoxication of the system. "That fever is a fermentation produced by a diastase, or soluble ferment elaborated by all micro-organisms and cells, and which they use in attacking and transforming matter, either inside their substance or out of it," is a new theory suggested by Roussey.

The motility of micro-organisms Ali-cohen has apparently settled, and shows that this motility is distinctly different from the "so-called Brownian movement."

The conclusions on puerperal fever are that the fever is attributable to two sets of causes—one of pathogenic bacteria penetrating into the genital tract, producing specific cases, and the other of ptomaines, the product of certain putrefactive and non specific bacteria—these ptomaines being absorbed into the circulation.

It has been very well established during the year that the pneumo-bacillus of Fraenkle, and not that of Friedlander, is the true one.

Itschosty says some things to which I wish to call your attention about the relationship of the bacilli of tuberculosis to the cells :

1. "That the wandering cells in the blood and lymph currents destroy living and virulent bacilli by phagocytosis.

2. They also carry the bacilli from the blood-current to the tissues and set up tuberculosis or tuberculosis infiltration.

3. The bacilli containing giant cells are the result of the breaking up of the nuclei of the lymphoid cells containing bacilli.

4. It is not usual for the giant cells to be the result of the breaking up of fixed cells.

5. The giant cells hinder the natural development of the bacilli and give rise to certain involution forms (granular condition, changes in string reaction) that are not seen in giant cells—these latter are also phagocytic.

6. The primary epitheloidal tubercle is not derived from the lymphoid tubercle, but they can both come from the bacilli containing lymphoid cells—the rapidity of the change depending upon the susceptibility of the animal to tuberculosis.

7. Whether the primary epitheloidal cell-tubercle can change to the fixed tissue cell form is doubtful, because it is doubtful whether a non-motile bacterium can change to a fixed cell.

8. The amæboid motion of the tissue cells and the mobility of the endothelial cells are responsible for the occurrence of tubercu-

losis by their embracing and the absorption of the lymphoid cells. How far they aid the process by taking up the bacilli is not certain, but they are ultimately like the cells in the blood—phagocytic

Ernst has shown that tuberculosis can be transmitted through the medium of milk from tuberculous cows, whether there is any sign of a lesion or not on the udder, and this is not rare, but more common "than would be easily believed."

There is nothing definitely known about the parasitic cause of the most infectious diseases, such as small-pox, measles, scarlet fever, etc. Koch is inclined to think that they are not very probably caused by bacteria, but by organisms of far different character, and whenever work is earnestly commenced in other directions, perhaps something will be found out definitely.

As to scarlatina, a Russian woman (Roskina), has examined 86 cases from a hospital clinic. The streptococcus which she discovered is described as follows: "It is in long chains of 20 to 25 μ. and nearly all of the same size, varying in the chain according to the soil, as in otorrhœa, etc: in cultures the size varies much. It grows with medium rapidity and forms round brown colonies on agar-agar at the temperature of the body. Its weak vitality is its special characteristic, varying in different media, being from ten days to a month on agar-agar and from three to five days on gelatine, and in this respect is its only difference from the streptococcus of erysipelas." If there be any practical good in her work, it is yet wrapped up in her theories.

Wurg has demonstrated the presence of leucomaines in the blood, two of which, methylamine and plasmaine, he has studied—these being of interest because of their connection with the elimination of oxygen.

In the Section I report there are necessarily a great many hypotheses gotten up, and in my opinion it is worth our while to record and study them, for if they be not the direct steps to "knowledge reduced to a system," we can reasonably assure ourselves they are the indirect, and will finally lead to the rock-bottom facts. I can join heartily in the wish of Prof. Robert Koch, "that the strength of the nations may be directed against these most minute and dangerous enemies of the human race, and that in this combat for the good of man one nation after another may be preëminent."

REPORT ON SURGERY.

By O. McMullan, M.D., Elizabeth City, N. C.

(Read before the Medical Society of North Carolina, at Asheville, May 26th, 1891.)

At the last meeting of this Society, held in Oxford, I was appointed by our honored President as *Chairman of the Section on Surgery*, and requested to make my report at this time.

As I understand the duties of this office, they are to make faithful report of all those transactions of a surgical nature, embodying a real and permanent interest, which have transpired throughout the world during the year now drawing to its close.

The field I am called upon to explore is almost limitless in its extent, and fertile with a vast fund of interesting facts, discovered and elaborated by that army of surgeons, who, patient, zealous for scientific fact, and tireless in their industry, are garnering, from year to year, from nature's secret recesses, fruitful discoveries both in the principles and the practice of surgery, adorning thereby and blessing the era in which they live.

Of necessity, from the great amount of material in view, I will be able to touch upon only the most salient and impressive facts, and even here the treatment will be synoptical rather than particular. This report will be an epitomized résumé of the advance in our art for the year 1890–'91, offered, not with the hope of giving to this learned body any facts with which they are not already familiar, but rather with the idea of furnishing a short, permanent history of surgical progress since our last meeting, for preservation in the archives of the literature of our Society, and for the purpose of reference and comparison in the years of the future.

Brain.—In no department of surgery has greater zeal been manifested, nor more painstaking and industrious investigation been exhibited than in the diagnosis and treatment of the surgical neuroses of the brain. Beginning, in the far past, with the extremities and more accessible regions of the body, the progressive surgeon has gradually, step by step, worked his way to the very penetralia of human anatomy, and to-day the "tripod of life" is invaded with a confidence which, only a little while in the past, would have been characterized as reckless temerity. The *terra incognita* has been

slowly but surely contracted in its boundaries, until to-day the scalpel held by skillful hand, with the handmaidens of asepsis and antisepsis, has removed almost the last barrier, and the brain itself is explored for the detection and removal of disease, even to its very ventricles. Cerebral localization has been much and closely studied, and a better understanding of the significance and the invariability of focal symptoms has been acquired, enabling the operator to form a more accurate judgment of the area affected and of the nature of the disturbing element.

In all closed cavities the just estimation of pathological conditions is, of necessity, difficult; and especially is this true of the encephalon encased in its unyielding bony structure, and it is mainly through the aberrations of nervous manifestations reflected back to the focal areas from which they emanate, that the surgeon is able to proceed with precision to the offending pathological condition. Working along this line much has been done in brain surgery during the past year, and with fairly good results.

A successful case of removal of brain tumor has been reported by Drs. McCall Anderson and George Buchanan.

Dr. Reynier, at the French Surgical Congress, presented a girl 10 years old, in whom, from the sensori-motor epilepsy present, M. Charcot had diagnosed a probable lesion of the middle and lower parts of the Rolandic convolution. Trephining was performed corresponding to this diagnosis, and a cystic tumor was found at the lower extremity of the pre-Rolandic sulcus and extending into the gray matter. The tumor was removed at two operations, a period of five months intervening, with the result of a cessation of the epileptiform seizures, and a complete cure of the child.

Dr. Jaennel, in the *British Medical Journal*, relates a case of trephining for Jacksonian epilepsy, with marked improvement in the symptoms.

Dr. Girard gives the history of an epileptic woman who shot herself in the left temple with a revolver. The bullet, with some bone-chips, was removed, the wound stitched up without drainage, and was healed on the seventh day.

The patient not only recovered from the effects of the pistol wound, but the great epileptic seizures were relieved, and now, after five months, she only suffers with occasional vertiginous attacks.

Many cases of trephining for both traumatic and idiopathic

blood-clot, in all possible regions of the brain, have been done during the past year.

Dr. Duret, of Lille, operated for extravasation upon brain surface with success, but the patient died on the twenty-fifth day, after a protracted alcoholic spree, with cerebral congestion.

Salzer, of Vienna, reports two cases of operation upon the cerebral sinuses for purulent thrombosis. The first case, having suffered with middle ear inflammation, gave manifestations of brain involvement. He was trephined over the base of the mastoid, and the brain, both temporal lobe and cerebellum, was explored for pus without success. The sigmoid sinus, found to contain a thrombus, was opened. The symptoms, however, did not improve, and upon autopsy a meniscoid abscess was found upon the convexity of the cerebellum, and the thrombus of the sigmoid sinus had extended to the sinus of the other side. The second case, a young girl, had suffered with otitis media chronica. Upon the supervention of cerebral symptoms the mastoid was opened, the sinus incised, and a thin, fœtid fluid evacuated. The case was rapidly cured.

Basing his opinion upon these cases, the reporter advises the incision of the sinus in all cases of purulent thrombosis, and even in simple thrombosis the incision should be made, if there be pus in the surrounding tissue, since it is impossible to say whether the thrombus be infectious, and by its removal the danger of pulmonary embolism is avoided.

Dr. Dennis removed a traumatic clot from the lateral ventricle. The patient died, not, however, from the opening of the ventricle, but from the original injury.

Two cases of rupture of the ventricle from compound fracture are given, both of which recovered with treatment by antisepsis and drainage.

In *Gaillard's Medical Journal* there is reported a case of trephining for non-traumatic, cerebral hemorrhage, with statistics of thirty similar cases, by Dr. Championnière. In all these cases there had been no deaths and no untoward occurrences. Dr. C's case had a cerebral hemorrhage twenty months before, and from that time there had been right hemiplegia with late contracture of hand and epileptic seizures. The aberrant, nervous symptoms pointed to the middle part of the pre-central convolution as the focal area implicated. The skull was opened at this point, and the remains of an old hemorrhage found and removed. The hemiplegia

lessened, the hand contracture ceased, the speech became more distinct, the intelligence more clear, and the epileptic attacks have entirely ceased for four months.

The operation of *craniectomy*, the removal of a narrow strip of the osseous envelope of the brain, done upon microcephalic and backward children for the purpose of giving the cerebral tissues an opportunity to expand and develope, has been performed repeatedly in this country and in Europe. The procedure has been attended with a minimal mortality, M. Lannelongue reporting statistics of 25 cases with only one death, and that from septicæmia, and hence possibly avoidable. The symptoms of retarded brain developments, mental hebetude and epileptic crises, have been, as a general rule, greatly improved, thus giving, in the first years of its inauguration, an earnest of the capabilities and benefits of the operation.

Keen, in the *Medical Press and Circular*, August 20, 1890, reports three operations done by himself for effusion into the lateral ventricles, with two cases from Mayo Robertson. The first case was that of a boy threatened with blindness from acute hydrocephalus. A button of bone was removed one and a quarter inches behind left meatus and the same distance above Reid's base-line. A hollow needle was inserted into the ventricle, the cerebro-spinal fluid drawn off, and a horse-hair drain inserted. The symptoms improved for a while, but again increasing in severity, a tumor of the cerebellum was suspected and exploration made accordingly. None was discovered. The right ventricle was then drained, rubber tubing being used on both sides. Twice the ventricles were irrigated, the fluid passing through the brain from side to side.

On the forty-fifth day after the first operation the patient died, and upon autopsy a sarcoma was found in the left lobe of the cerebellum, compressing the straight sinus, the veins of Galen, and encroaching upon the fourth ventricle.

The second case was a girl 3½ years old with hydrocephalus, dating from a few months after birth. Both ventricles were tapped and rubber drains inserted. On the next day convulsions occurred, but were relieved by a flowing in of warm water with a pressure of eight inches. Eight times the convulsions were thus relieved, but the child died on the fifth day. The third case was one of tubercular meningitis with unilateral, acute hydrocephalus, in-

volving the ventricle. The foramen of Munro was closed. The ventricle was tapped through arm-centre and the child died four hours after the operation.

Mayo Robertson communicates the case of a child 10 years old, who suffered from aural discharge, rigidity of neck and twitching of right side of mouth. On admission to hospital there was pain in left side of head, paresis of right arm and leg, gradually growing into complete hemiplegia and aphasia. Through an opening over arm-centre an exploring needle was moved in various directions in search of pus. None was found. Finally the needle was passed into the lateral ventricle and one-half ounce of clear fluid withdrawn. The pulsations of brain, which were absent before the paracentesis, returned. The wound was closed without drainage, the hemiplegia and aphasia gradually passed away, and the child completely recovered.

The second case, by same author, was one of increasing hydrocephalus. A rubber drain was inserted into the ventricle, the amount of discharge was large, and the child died in convulsions on the third day.

From the foregoing cases the general conclusions are reached :

1. In case of rupture of ventricle in compound fracture asepsis and drainage are indicated. In cases of rupture in simple fracture no interference is permissible, unless serious pressure results arise, in which case the fluid should be drained away gradually by means of horse-hair or some other slow method.

2. Abscess of brain rupturing into the lateral ventricle should be treated by immediate evacuation, irrigation and drainage through a bilateral opening. This is a forlorn hope, but merits a trial.

3. In acute effusion, tapping, without drainage, will save some lives otherwise doomed to be lost, and in chronic cases slow drainage is indicated.

4. Irrigation of brain must be either by an artificial cerebro-spinal fluid, or by an unirritating and innocuous antiseptic.

5. Convulsions, due to rapid withdrawal of cerebro-spinal fluid, may be checked by irrigation, under gentle pressure, with a warm, non-irritant fluid.

6. In blood extravasation into the lateral ventricles, at least when of traumatic origin, instant trephining should be done, and in some cases will result in cure.

Reasoning from analogy, as many surgeons have done, it would seem as legitimate and feasible to tap and explore the ventricles—since the intervening cerebral tissue can be pierced with comparative impunity—for hydrops, purulent accumulations, hemorrhages, etc., as the peritoneal and pleural cavities. But there are impediments which, possibly, will never be entirely overcome, even with the most improved operative technique. In the first place, the brain being encased in an unyielding, bony envelope, atmospheric pressure is not free to exert that equalizing influence over the circulation as in other cavities of the body with a flexible environment. When the fluid is withdrawn from the inner cavities of the encephalon, leaving them empty, nature abhorring a vacuum, they must be filled in some way, and this is evidently accomplished by dilatation of the cerebral circulation. Hence the reason for the convulsive seizures upon the removal of the fluid in hydrocephalus and the injunction to evacuate ventricular effusions in minimal quantities. In the second place, the delicate organization of brain tissue and the very vital importance of its functions renders it less tolerant of sudden changes in the relations of its component parts and in the rythmic harmony of its circulation

Lungs.—The lungs are becoming each year a more fertile field for the surgeon's knife, and operations for abscess, simple and tubercular, and gangrene are daily multiplying. Ramsey, in the *Annals of Surgery*, reports four operations upon the pulmonary tissue, three for abscess and one for gangrene. In the operation for gangrene an inch of the seventh rib was resected, the affected area, determined by an exploring needle, drained, and the patient made a complete recovery. The first case of abscess was consequent upon gunshot. Pneumothorax existed. A portion of the third to seventh ribs inclusive was resected, the abscess drained and the patient cured. The third case was treated in the same way, but, unfortunately, multiple abscesses were present, and the patient succumbed to septicæmia. Many operations have been reported upon tubercular abscesses, treated both by incision and by the intra-pulmonary injection of iodoform and other antiseptic, but unirritating, medicaments.

Abdomen.—In this department of surgical work more activity has, perhaps, been displayed than in any other, but little, however, has been added of real and permanent interest since our last meet-

ing. The operation of "intestinal anastomosis" by the decalcified bone-plates of Seun, or the catgut rings of Abbe, is fast taking the place of the old operation of resection.

Dr. Robert F. Weir, in the *Medical Record*, January 10, 1891, reports a case of pylorectomy with gastro-enterostomy, performed by the aid of Abbe's ring, for pyloric stenosis. The operation was a permanent success. Dr. W. T. Bull, in the same Journal and date, reports three cases of pylorectomy with gastro-enterostomy done for cancer of the pylorus. In these cases the cut ends of the stomach and duodenum were stitched up and left as cul-de-sacs, the upper part of the jejunum being joined directly with the stomach by means of "intestinal anastomosis." Two of Dr. Bull's cases died from faulty technique in the manner of performing the operation, which, he thinks, can be easily overcome in future cases.

The conclusions drawn from these cases are:

1. The operation of "intestinal anastomosis" for pyloric stenosis is preferable to Loreta's method of dilatation on account of the greater mortality of the latter—40 per cent.—as compared with the former—11 per cent.—and on account of the disposition to recontraction of dilated ring.

2. "Intestinal anastomosis" is to be preferred in malignant tumors, since, on account of the amount of tissue necessarily sacrificed, it is very difficult to fit the duodenum to the cut end of the stomach, and because the duodenum is frequently only partially covered with peritoneum it would be impossible to procure an approximation of serous surfaces throughout the whole extent of the circular wound.

3. In the operation of "intestinal anastomosis" by bone-plates or catgut rings there is procured firm coaptation of the surfaces, the procedure is quickly accomplished, and the opening from stomach to jejunum is equally well preserved if made sufficiently large in the first instance.

T. B. Robinson, in the *North American Practitioner*, Vol. XI., No. 10, p. 451, describes a new plate for intestinal "anastomosis," which he has used with great success in experimental operations upon dogs.

The objection to Senn's bone plates is the length of time consumed in their preparation; to Abbe's catgut rings, Davis' catgut mats and Brokaw's segmented rubber ring is that they do not

coäptate sufficient surface, and, becoming macerated, yield. They do not keep the bi mucous fistula sufficiently patulous to prevent contraction, nor do they procure that absolute rest of wound surface which insures healing. The plates, the author advises, are a "combination of a ring of catgut fastened to a plate made of two pieces of rubber. The two pieces of rubber are stitched together at each end with catgut, and the ring is sutured to the side of the rubber plate with catgut sutures. The needle-armed sutures of the catgut ring are inserted through holes cut in the rubber plate. A triangular piece is cut from each approximating edge of segments composing the plates to admit of fecal circulation." The above is Dr Robinson's own description, and with the plates thus prepared he claims that large surfaces are coäptated firmly and persistently, and that finally the plates are readily absorbed and easily discharged.

Transplantation of Tissue.—Skin-grafting after the method of Theirsch is growing gradually into favor, and is fast superseding, especially where large surfaces are to be covered, the minimal method of Riverdin. Senn's method of bone repair in cases of osteo-myelitis, by packing the cavity, from which the sequestrum has been removed, with decalcified bone chips, is now accepted by the profession as an orthodox surgical help.

William H. Sherwood, of Ohio, relates a case of transplanting the femur of the rabbit for ununited fracture of forearm. After various unsuccessful attempts to procure bony union by other methods and by other surgeons, the author, having cut away all cicatricial tissue, and having fully freshened the ends of the bones to be united, wedged in between them thus prepared nine pieces of bone cut in transverse segments, one-quarter inch in thickness, from fresh femur of rabbit. The result was firm union without untoward symptoms except high surgical fever at the end of forty-eight hours.

The case along this line of most interest, perhaps, because of the notoriety given it through the secular press, is that reported by Dr. A. M. Phelps in the *Medical Record* of February 21, 1891. In this case it was attempted to transplant one inch of a dog's leg, into which entered the nutrient artery, between the freshened ends of an old, ununited and often-operated upon fracture in a boy. The operation was not a success as regards the final union of the bones,

but it demonstrated, no doubt, the possibility of bone-grafting *en masse* when the mistakes of the intricate technique have been overcome and avoided, and the mechanical immobilization of patient and dog have been perfected. In this case, while bony union between the different species did not take place, fleshy union did, and there were evidences in the removed segment showing attempts made at osseous repair, and if complete rest of the approximated bone surfaces could have been secured, in all probability bony union would have been accomplished. No harm resulted to the physical well-being of either boy or dog. This operation, no doubt, with further elaboration, will become a great boon to humanity, for while the method of Theirsch is a great improvement over the minimal method of Riverdin, still martyrs must be found who are willing to be flayed in order that their friends may be repaired.

Aneurism.—Dr. William Macewen, in the *Lancet* of November 22, 1890, reports four cases of large aneurism treated by the formation of *white* thrombi in the sac. Being cognizant of the futility, often, of the formation of *red* thrombi in the sac by galvanopuncture and by the introduction of various foreign substances, instead of undergoing formation into firm fibrillar tissue, oftentimes shrink and degenerate into red and yellow softening with attendant septic emboli, Dr. Macewen arrives at the conclusion that the safest and best filling for the sac of an inoperable aneurism is that *white* thrombus which is formed by an uniform deposition of plastic leucocytes upon the inner wall of the sac, gradually producing its occlusion. This result is effected by just that degree of gentle irriration of the entire inner wall of the aneurismal sac as shall be necessary to set up plastic inflammation, and not sufficiently severe to produce softening or dangerous injury to sac wall. This irritation is procured by the introduction into the sac of a very slender, highly polished and aseptic pin, and gently moving its point systematically over the entire inner wall of the sac. To thoroughly accomplish this, in order that every part of the sac wall may be equally strengthened by the plastic deposition, it may be necessary to introduce the pin from several different points.

Dr. C. L. Sheich has found that in wound cavities filled with sponges saturated with a solution of iodide of potassium a more rapid exudation of leucocytes is procured than when other salt solutions are used This phenome on was also observed when the

iodide was exhibited by the mouth and hypodermically. If his observation be true, it would, no doubt, be expedient to supplement the irritation of the aneurismal walls, after the method of Dr. Macewen, by the well-known iodide therapeusis. Very probably in this observation we find the explanation of the beneficial results often following the exhibition of the iodide of potassium in cases of inoperable aneurism.

Tuberculin.—As to the effect of hypodermatic injections of "tuberculin" in skin tuberculosis, especially in lupus and in tuberculous joints, the professional mind seems to be divided. Much has been written and spoken in reference to this sensational discovery, but sufficient time has not yet elapsed to test its true position in surgical practice. Reports of amelioration of symptoms, progressive cure and complete recovery have come from various experimenters, while on the other hand, many claim that little or no benefit has been observed, and the Medical Faculty of the University of Bonn have abandoned the parataloid injections altogether The trend, however, of professional opinion at this writing seems to be that there is true merit in the discovery; at least as regards tuberculosis of the joints and skin, but that further experimentation is necessary to establish its rightful place in surgical science.

During the year some new drugs have taken their permanent place in the progressive surgeon's armamentarium, and some, long and well known, have developed new capabilities.

Aristol, in lieu of iodoform, is a favorite with many.

Peroxide of hydrogen is a safe, powerful and little irritating antiseptic. It freely permeates and searches the tissues even to the most hidden parts, and has been used with marked success by this reporter as an injection in gonorrhœa. It is especially useful in this affection, since it possesses the power to penetrate the crypt and follicles of the urethra, attacking and destroying the gonococcus in his remotest lair.

Professor V. Mosctig claims that *iodoform*, in parenchymatous injections, is attended with marked improvement, and even cure, of soft goitre. Dr. Frey has also used it, in injection, for the cure of cystic and fibrous goitre. Emulsion of iodoform, and iodoform in oil, has been used, and is highly spoken of by many eminent ones, in the treatment of cold, tuberculous abscess and in tubercular

arthritis. In the *American Journal of the Medical Sciences* for December, 1890, is an abstract from a paper by Dr. Bruns, in which the method of procedure and statistical results are clearly given. The latest addition of medicaments to surgical practice is the "color cure" for cancer and ulcerous conditions of a chronic character. Report upon the remarkable results from the use of the *aniline dyes*, especially the *blue Pyoktanin*, are coming from numerous experimenters. Dr. Willey Meyer, of New York, has a very interesting and elaborate paper on this treatment in the *Medical Record* of April 25, 1891; and while it is too early to dogmatize about so recent a method of cure for so grave a malady, still the results so far given would indicate a future for the aniline dyes in inoperable tumors and ulcerous lesions.

From personal experience, since our last meeting, I have to report the case of a young man injured by a mill-shaft. Crawling under the shaft for the purpose of removing the débris, he was caught in the clothing of his back by a pin projecting from the revolving shaft. In this way he was firmly pinioned to the shaft, which was making about five hundred revolutions per minute. He was so hung that the podalic was longer than the cephalic extremity, and for this reason his head escaped injury; but with each revolution his feet struck the floor below and a piece of timber above. It was estimated that the man made over five hundred revolutions before the machinery could be stopped, and what is remarkable to this writer is that the revolutions, so rapid and so long-continued, did not, in themselves, produce death. Strange to say, the man did not even lose consciousness, and at a later date gave a very graphic description of his sensations. Upon examination two ribs were found to be fractured; there was compound fracture of both bones of the right leg three inches above ankle-joints, and a compound, comminuted fracture of all the metatarsal bones of left foot except the first and fifth. The enveloping skin, except at points of rupture, and they were small, appeared little injured, and at the urgent request of the conscious patient, we decided, after a faithful portrayal of the dangers of a secondary operation, to give him the bare, possible chance for the saving of his feet. The skin appearances, however, proved deceptive, and beneath there was complete disorganization of the soft, and comminution of the osseous, tissue. Slow but progressive gangrene, in spite of faithful

antisepsis and drainage, took place in both feet. We amputated the right at the juncture of the upper with the middle third on the eleventh, and the left just above the ankle on the fifteenth day after the injury was inflicted.

The patient stood the operations well, his general condition began to improve at once, the stumps were perfect, and he is now in correspondence with A. A. Marks for a pair of rubber feet.

The second case was one of tetanus from nail-wound in foot occurring in a girl 12 years old. The infection-atrium was thoroughly opened and disinfected, to prevent, if possible, the further absorption of microbic poison, while the convulsive seizures and tonic spasms were mitigated and finally controlled by the exhibition of the solid extract of physostigma in such amounts as to obtain its physiological effects. The amounts given were far in excess of the dosage recorded in our texts, and were regulated only by the influence exerted over the clonic and spastic muscular contractions. This basis of medicinal treatment was supplemented by a mixture of bromide, chloral and morphine.

As yet we have no specific treatment for the tetanus microbe, and the indications to be met with are symptomatic and supportive. This case made a good recovery in about three weeks, as did another wounded and treated in the same way about three years ago. There are many other facts to the general surgeon of special interest—quill-drainage, electro cystoscopy for diagnostic purposes, the treatment of urethral stricture and inoperable tumors by electrolysis, retained tube in cancerous stricture of the œsophagus, etc., but a separate notice would protract this paper to tedious length.

I thank you for your patient attention, and beg that you lay over the faults and omissions herein appearing the mantle of professional charity.

AN APPEAL FOR STATE CARE FOR ALL THE INSANE, FROM AN ECONOMIC STAND-POINT.

By Isaac M. Taylor, M.D., Assistant Physician State Hospital, Morganton, N. C.

(The Report of the Chairman of the Section on State Medicine and Medical Jurisprudence, made to the Medical Society of the State of North Carolina, May 28th, 1891.)

Mr. President and Gentlemen of the Medical Society of the State of North Carolina:

When looking about for a subject in the domain of State Medicine upon which to base the Report of this Section, I became interested in the growth of our lunacy laws and their apparent inconsistencies, as a result of this line of investigation, I shall ask your attention to some calculations, and conclusions drawn therefrom, upon the "State Care of all its Insane, from an Economic Stand-point."

Beginning with the establishment of the North Carolina Insane Asylum, the laws of our State show an appreciation by our legislators of the needs of the insane, and a determination on the part of our people to care for all who had been deprived of the proper use of their mental faculties.

So well had our first Asylum promoters studied the question of probable increase in insanity when building the North Carolina Asylum, that the institution was able to meet the demands for accommodation until 1866.

It is probable that this plan had in view gradual extension, as time demonstrated the inadequacy of the provision there made, and that the capacity of the one institution would have been increased, or there would have been other asylums built, but the coming of the war stopped all such philanthropic work, our people found on the several battle-fields those who needed all the comforts which could be spared from their scanty stores, and to provide for the common defence was needed all the public money.

With peace again restored, our people soon found that the provision for the insane made in 1856 had become too small.

The war, fruitful in causes which led to mental disease in those

predisposed thereto, was followed by years of struggle under a load of public and private debts.

Families who had borne the burden of their insane relatives from their private means, were forced to seek relief at the State institution, and the negro race, freed from bondage and protection, and forced to rely on their own efforts in the struggle for existence, proved a fertile field for mental diseases.

Add to these causes the growing acknowledgment by the profession and the laity of the value of hospital care and protection, and the more ready recognition by the profession of cases of incipient mental disease, and we have the reasons for the seeming great increase in the number of the insane and the demand for their reception in the Asylum.

In the face of the depreciated values of taxables and the scarcity of money, recognizing the justice of the demands of this accumulation of chronic insane, our Constitution adopted in these troublous times, accepts for the State, in the fullest measure, the charge of all the insane, as well as the blind and the deaf mutes, and pledges the faith of the State to provide for the idiots and inebriates as soon as practicable.

These pledges were not modified when the State came again into the hands of its lawful sons, but recovery from the direful effects of the war was slow, and, in common with all our people, the insane had to suffer until the funds for their relief were available.

To carry into effect the provisions of the Constitution, and pending the building of other asylums, the first laws provided that all the insane should be cared for from the public Treasury, the Asylum was crowded to its utmost capacity, and those who could not be admitted there were generously supported at their homes.

This policy was soon demonstrated to be too liberal, leaving such an opening for wholesale frauds that, without fear of detection, unscrupulous persons in remote country districts, had those who were deliriously sick, the imbeciles, epileptics, paralytics and dotards adjudged insane that they might receive a share of the public fund.

Such was the rush that, to prevent the bankruptcy of the State, the next Legislature repealed this obnoxious law, and, accepting a policy which had been tried in some of our sister States and by them declared adequate and humane, gave to the care of the coun-

ties all the insane except such recent cases as presented prospect for recovery, those whose malady was accompanied by such violent demonstrations that they seemed dangerous to the community, or those who were adjudged insane when arraigned for crime.

Immediately plans were set on foot for the building of additional asylums to meet the increased demands, but unfortunately, their size was based upon false statistics, and before they were opened the census of 1880 showed the gross errors of that of a decade before, and they afforded only a modicum of the relief needed.

It is probable that the intention of our Legislature when the Eastern Hospital at Goldsboro and the State Hospital at Morganton were projected, was for the State to again assume the direct care of all the insane. Since they have been opened the only increase of capacity has been made at the expense of the comfort of those cared for by the institutions and from funds originally appropriated for their support and saved by judicious economy.

Here beneficent legislation stopped, in disregard of the testimony of all those who had investigated the subject, that our present attitude to our unfortunate brethren was pernicious, and despite the appeals from the friends of the insane emphasized by each succeeding report made by the superintendents of our asylums, our legislators have been deafened by the counter cry for economy, and our people, ignorant of the real condition of affairs, have been contented with a system which is an outrage on humanity. Rude is the awakening to each individual when necessity forces one to seek relief.

Such was the development of our present system, and as each member of this Society must be acquainted with its barbarities, it is needless for me to review what was presented at the last two meetings of this Society in the reports of this Section by Drs. Battle and Hodges.

Our people are conservative, but I believe they are willing to do what is humane and benevolent, and accepting this as their attitude, I have endeavored to calculate the cost of humane provision for our insane in answer to the query :

"Can our State afford to care for all her insane in State institutions ? "

Unfortunately the results of the eleventh census as to the number of insane in our State are not yet available for the calculations

of this paper, and the basis used must still be the census of 1880, accepting the ratio therein established as still existing, and calculating the number of insane now in the State on the total population as shown by the census of 1890.

It is safe to assume that the results thus reached will be nearly correct, as the statistics of the tenth census have been proved, and the ratios there shown are in accord with those previously determined, and it is probable that the ratio will hold good for the ten years just past, there has been little change in the character of our population. No horde of pauper immigrants from Europe have found a settlement in our borders; there has been a healthy growth, the natural increase of our own people augmented in the main by native Americans from our sister States northward.

Nor have there been causes to greatly disturb the ratio between the producing and dependent classes—no war or great financial crisis and no famine or widespread epidemic.

So, without a material increase in the proportion of those who must share the public charity, there has been a considerable advance in the value of taxables, and on every hand is evidence of more positive recovery from the financial disasters following the civil war.

There were in North Carolina in 1880 white insane 1,591, and colored insane 437, making a total of 2,028; of these 269 were in the one Asylum then open, 218 were in poor houses and 23 were confined in jails, leaving those cared for at home 1,518.

The ratio of increase in population, as shown by the eleventh census is, for whites, 20.98 per cent., and for colored, 6.76 per cent.; so, if the proportion is preserved, there are now in the State white insane 1,925, colored insane 448—a total of 2.373.

The increase in Asylum room since 1880 has been, at the State Hospital 500, at the Eastern Hospital 250, and the North Carolina Asylum has, by over-crowding, been caring for 300 patients, though constructed for only 204. Taking a mean number, 250, as its capacity, we have the total hospital room now available as 1,000—an increase since 1880 of 784. This leaves the total number of insane in our State and unprovided for at the hospitals 1,373.

That we may have an outside figure, for ease in calculation, and to leave some margin for increase, I will assume that we are to provide for 1,400 insane.

Assuming that the hospitals now opened are ample for the care

and treatment of the acute cases, the violent and the convalescent, we have before us the problem of caring for 1,400, all of the misnamed harmless and incurable class. The first consideration is the provision of a plant suitable for their reception.

The estimated cost of the hospitals for the insane in the United States shows an average of about $1,000 for each patient accommodated; this average embraces much money wastefully spent for elaborate and needless architectural ornamentation and fittings and a good round sum spent in political jobbery. The costliest construction is not needed for the class of insane who are now unprovided for, however essential it may be in hospitals ready to receive all classes.

In our State, where land, materials and labor are cheap, and where there are no extremes of temperature to be guarded against, provision could be made for all, at a *per capita* cost not to exceed $300, provided, of course, that such extension is made in connection with the hospitals already established, and advantage is thus taken of the provision there made in excess of their needs; this would make an aggregate cost of $420,000.

Provide for this by an issue of bonds at 6 per cent., which would leave a liberal margin for a sinking fund, and we would have an annual interest account of $25,000, but the construction is necessarily slow, and an annual appropriation sufficient for the amount of building possible to be economically done, could be made without increasing the public debt or oppressing the tax-payers.

The cost of maintainance is more difficult to approximate, the average cost *per capita* for maintainance in our three institutions is estimated at $167.78. This shows a steady yearly reduction of expense *per capita* since 1871, when it was $303.73, in spite of the fact that year by year our hospitals have been caring for a greater proportion of acute cases necessarily the most expensive class.

This reduction is due to a number of factors—the lower prices of the necessaries of life, a more economical administration of the affairs of our institutions, but more largely to the increased number of insane cared for and a consequent reduction in the cost to each individual of the expenses of administration.

This cost by further extension of asylum accommodation is capable of much greater reduction than is contemplated in the provision for those needing asylum care now in the State.

The cost for the class of harmless and incurables probably would be not far from $130 *per capita*—a total annual cost of $182,000, or, if we include the interest account, at an annual cost of $207,200.

Considering only the maintainance account, we have before us the fact that for $352,700 all the insane of our State could be cared for within the walls of our hospitals. This would necessitate an increase of State tax of about four and a half cents on each hundred dollars worth of taxable property.

It must be borne in mind that this is not a new expense, each idle individual consumes his proportion of the public wealth, and the charge is only transferred, in some cases from the counties, in some from private families to the State, and it is probable that, with the economies of wholesale provision, there is a saving effected rather than an increase of expense.

Dr. Hodges has calculated that the average *per capita* cost of maintainance in the county poor houses is $85.78, so for the increased amount of $44.22 would be given such comfort as would be sumptuous in comparison, food plentiful and wholesome, medical attention and supervision in sickness and in health, cleanliness and such occupation and amusement as would be best suited to each individual capacity.

This I conceive to be a true statement of the cost of suitable provision for all our insane with the estimates made in excess rather than below the actual cost, the only argument now urged against such provision is on the ground of expense, and while the aggregate is large, the cost to each individual is small, and to balance this are manifest advantages. These naturally group themselves into three divisions—to the Insane, to the Community, to Posterity.

To the insane the advantages are :

1. The removal of the necessity for classing one portion as harmless and incurable, and for that reason denying them a chance for recovery.

Probably no single cause has been so productive of harm as this necessity, forced upon us by our present system. There is no alienist so skilled that he is able to pronounce with certainty upon any case of insanity as harmless; fed, clothed, kept clean, amused, his slightest ailment considered and treated, the patient may be tractable and inoffensive, under other conditions, half starved, uncleanly and brutally treated, the dormant fires of insanity leap into flame and

the docile patient becomes a dangerous maniac. Nor are there those so skilled as to pronounce one incurable; the records of all hospitals contain accounts of unlooked-for recoveries—patients, after long years of chronic mental disease, recovering their reason and remaining perfectly well.

But even if the classification could be made, it does not remove the necessity for the tenderest care; because one is harmless does not mean that he is cleanly, or that he is quiet, or that he is willing to remain at one place and be protected from storm and cold.

2. Their protection from the sane in the community. This is a condition which is not met in the poor-house care of our unfortunates; it is a positive need; they are the victims of the gravest wrongs, from the jeers of the thoughtless to the cruelties of the wicked.

Especially is this protection needed by the female element, unrestrained by the higher moral impulses which are the accompaniments of a sound intellect, often with erotic tendencies as a symptom of their mental disease, they are easily the victims of the most vicious of the community. It is appalling to know how many of these helpless ones have been debauched.

3. They would no longer be brought in contact with paupers and criminals.

It must be remembered in this connection that the insane, dependent wholly for support upon the public, are not properly paupers, until brought low by disease they were producers and tax payers, contributing their proportion to the care of their unfortunate fellows; less than 5 per cent. come from the pauper class. A still smaller per centage are from the criminal class, and many have a keen sense of the degradation of being confined in the poor houses and jails.

4. It would give suitable employment to each one. All well-conducted institutions seek to keep the patients constantly employed at work suited to their mental and physical capacity, and though many protest against being so employed, it is a great help in keeping them contented and in preserving health and strength.

The advantages to the community are :

1. An assurance to each one of high or low degree in the event that such a misfortune should befall any one of his family, no matter what the form of the malady, proper care would be taken

of the unfortunate, and every chance for recovery would be given under the guidance of those acquainted with the needs of the case, a safe conduct to health, if possible, and careful protection in the event of incurability.

2. Freedom from a troublesome or dangerous element in the community.

3. A grateful reduction of expense by the utilization of the labor of the better class of insane in productive work.

The amount of work which can be done by such persons is large, while never enough to be self-supporting, each little helps, and just so much is the burden lightened on the shoulders of the tax-payers.

4. A sense of a duty properly done and a knowledge that the demands of humanity are fully met.

To posterity some of the advantages are :

1. A gradual reduction of the ratio between the dependent classes and the producers.

There is no factor in the production of insanity and mental defects more persistently present than heredity. Dormant in one generation, it is rife in the next. Necessarily if the progeny of the insane are born during such insanity the defect is more likely to be transmitted, so, while it would be impossible to prevent the marriage of those who have an hereditary tendency to mental disease, the sequestration of those actually insane will greatly reduce the number of their descendants.

Already the Commission in Lunacy of the State of New York announce that there is an apparent reduction in the annual increase of insanity, and attribute it, in part, to efforts in this direction.

2. A reduction in the ratio of the criminal classes. This would be in consequence of the same supervision.

Students of sciology are every day more clearly showing that the criminal classes are the results of degenerated physical and mental powers. Says Maudsley, in speaking of criminals : "Other important facts disclosed by their family histories are that a considerable proportion of them are weak-minded, or epileptic, or become insane, or that they spring from families in which insanity, epilepsy, or some other neurosis exists, and that the diseases from which they suffer and of which they die, are chiefly tubercular diseases and diseases of the nervous system. Crime is a sort of outlet in which their unsound tendencies are discharged ; they

would go mad if they were not criminals, and they do not go mad because they are criminals."

In addition to the consideration here given to the needs of the chronic insane, I had hoped to ask your attention to some of the claims of the imbeciles. Although their number is large and many are deserving of some relief, there has been no effort in any direction toward the amelioration of their condition, and there is not available any data upon which to argue for their betterment. Reluctantly I abandon the whole theme to some other who may be able to direct the public attention to these unfortunates and hasten the time when it is practicable to establish institutions for their education and protection.

In conclusion, I have but to say that the time will come when the State must assume the care of all its insane—the longer it is delayed the greater must be the first outlay for their accommodation and the annual charge for their support.

The present system has had a long and fair trial and has proved barbarous; any effort to reform it short of its total abolition is practically hopeless.

State care is the only solution of the problem which meets every objection—it is benevolent, it is humane, it is economical.

REPORT OF THE SECTION ON THERAPEUTICS.

By W. H. Wilson, M.D.

(Read before the Medical Society of North Carolina, at Asheville, May 26th, 1891.)

Mr. President and Gentlemen of the Medical Society of the State of North Carolina:

It affords me much pleasure, as Chairman of the Section on Therapeutics, to report that this branch of medical science has kept pace with the wonderful progress of our profession. The past year has not shown so marked progress in the introduction of new remedies as in the more thorough understanding of those in use, in their proper administration. Clinical experience of the past year has shorn some of our once lauded remedies of their glory, while the discovery of the true merits of others entitle them to a prominent place in our list of therapeutic remedies.

Antipyretics, a class of remedies but recently introduced, have stood the test of experience, and are now regarded as among our most valuable remedial agents. The most strict conservatism should be the true guide for their use. This would, in fever, limit them to use in a condition of hyperpyrexia. To be more clearly understood, I will define the terms pyrexia and hyperpyrexia: Pyrexia is usually applied to a simple fever, where the temperature does not exceed 103°, hyperpyrexia when above that point. I, however, believe there are exceptions to this arbitrary rule for the use of antipyretics.

Owing to the peculiarities of some individuals, a condition we define as idiosyncratic, we have what I consider an indication for the use of their remedies. We frequently find a patient suffering with severe headache, thirst, great restlessness and excitement of the nervous system, when the temperature does not reach a condition we term hyperpyretic, while, on the other hand, we find cases where the temperature is hyperperetic, these symptoms are absent, or mild. Hence I consider antipyretics indicated whenever the symptoms are present with fever, without special regard to height of temperature.

These symptoms indicate congestion of the nerve centres from the fever, and therefore should be relieved by the ingestion of

antipyretics, due regard being paid to the strength of the patient a condition of exhaustion contraindicating their use. To this class belong antipyrine, antifebrine, phenacetine and acid analine. The effects of all are very similar, though their strength is different, and should be used in doses accordingly. Antipyrine may be given in from 10 to 15 grains, while the doses of the other antipyretics are usually from 3 to 8 grains, as per effect and condition for whose relief they are administered. I have found nothing but favorable results from these drugs when judiciously administered for the proper diseased condition. When I use them for reduction of temperature I invariably follow them by supporting doses of quinine as soon as perspiration begins. When this rule is followed we need never fear any prostration from their use. In the incipiency of their use too large doses were given. It is rarely ever necessary to give more than 10 grs. antipyrine or 6 of the others to reduce temperature sufficient. In addition to the use of these remedies in fever I have found them most valuable agents for the relief of asthma, especially the spasmodic variety, aching of dengue, la grippe, spasmodic laryngitis, congestion of lungs. I consider these agents valuable in pneumonia, acting as well on the temperature and nervous system as on the circulation. Their effects are salutary, in small doses, in the dyspnœ of advanced state of consumption, care being exercised in regard to patient's strength.

I have also found them most valuable remedies for the relief of rheumatism, chronic or acute, muscular or articular; neuralgia, sciatica, migraine, headache in its various nervous forms. They form many happy combinations with salol, morphia and salacine for the above enumerated conditions as per effect desired.

Adonis vernalis is a new cardiac tonic similar in its effects to digitalis, is useful in dropsy and various heart affections. Its action is similar to digitalis in rendering the heart-beat slower, stronger and in increasing excretion of the kidney.

Ajowan, a remedy containing thymol, is claimed by Dr. Warring to be a most efficacious carminative; he also claims for it remedial properties in cholera. It has also been found to be valuable in alcoholism, and should be given a further trial in that condition. As an ingredient of poultices it is said to have the property of relieving superficial pain.

Arsenite of copper is still regarded as one of our most valuable

recent additions to our list of therapeutic remedies. In the diarrhœa of typhoid fever I have found it more valuable than opium, bismuth and pepsin. In simple diarrhœa, in combination or in connection with sulpho carbonate of zinc, I consider our most efficacious treatment, rendering the use of opium unnecessary or in much less quantity than formerly—in dysentery its results are alike salutary.

Balsam apple has been used in the treatment of colic with success; also as an efficient emetic was introduced by Dr. McNeil. Local pain-relieving properties are attributed to it. It is also recommended as a hydragogue in dropsy.

Mosquera's beef meal and cocoa is a valuable food product, being largely introduced by P. D. & Co. Every physician, no doubt, has had experience in endeavoring to nourish his patients by artificial food, but this preparation seems now to have relieved him of that annoyance. Many of the so-called foods are not only useless, but repulsive to a delicate stomach. This preparation I have found to be pleasant, agreeable to the most sensitive stomach and highly nutritious—the property most to be desired.

This preparation is indicated in all cases of wasting diseases and may be administered in soup, animal broths, milk, eggs, tea or on toast. The great variety of ways in which it may be administered being of much advantage, as patients do not thus tire of its use. Its merits entitle it to a trial in all cases where an artificial food is indicated.

Berberis aquifolium is a new remedy recently introduced by P. D. & Co., which has valuable alterative and antisyphilytic properties. It is also useful in obstinate skin diseases.

A fluid extract corn silk is valuable in cystitis, also as a demulcent diuretic, and is efficient in those conditions of the urine where ammoniacal decomposition is going on in the bladder, drachm doses every four hours usually being sufficient to secure its physiological effects.

The preparations of jambul seed have recently been used for the relief of diabetic condition. Its effect is said to be due to its inhibitory action on the diastatic ferments, lessening the formation of sugar. The bark is also said to be useful. The facts in regard to this preparation justify a further trial for the relief of diabetic conditions.

Convallaria Majalis is a new cardiac tonic made from the roots, flowers or herb, the fluid extract of the root being the strongest. Its action is too slow and strengthens heart-beats. It is an active poison in over-doses, but has not the disadvantage of a cumulative effect. It is also a diuretic. It is claimed to give relief when other tonics fail. Dose, 10 to 15 minims every six hours or *pro-re-nata.*

Liquor sedans is a scientific compound of black haw, golden seal and Jamaica dogwood with aro. It is valuable in utero-ovarian irritation, ovaritis, neuralgia of uterus, metargia, etc. This is an excellent compound, the result of scientific blending of remedies so essential to therapeutic success.

Salycilate of sodr has recently been found to be a valuable agent for the relief of colds, bronchitis, and in la grippe its action is seemingly specific in relieving the headache and muscular aching due to this universally popular disease. I have used it extensively in these conditions with eminent success. To get its fullest effects we must administer it in large doses (20 to 30 grs) every six hours, or *pro-re-nata.*

In regard to the beneficial uses of pepsin and pancreatin, I find to obtain the fullest effect pepsin should be administered early after meals, as its action is expected to benefit stomach digestion, or digestion in its initial process (mastication excepted), while pancreatin is active only in duodenal digestion. When pancreatin is administered immediately after taking nourishment it is destroyed in the tedious process of stomach digestion; but when administered near the end of stomach digestion it passes rapidly into the duodenum, where it performs its function as an active agent of digestion in its alkaline media. For these reasons pancreatin should be administered from two to four hours after the digestion of food, owing to character of nourishment taken.

Antikamnia is a coal-tar preparation which has been found valuable in migraine, headache, hemicrania, rheumatism, neuralgia and in the various forms of painful nervous affections. Its action is very similar to the antipyretics mentioned in the first part of this paper.

Beneficial results may be derived from compounding sol cocine with phenol. The following results are obtained by adding the phenol; toxic effects are prevented, decomposition of solution avoided. Local congestion does not follow the use of solution with phenol—anæsthetic effect heightened.

THE EVOLUTION OF SURGERY.

(The Annual Essay, read before the North Carolina Medical Society, May, 1891, by Dr. Thomas E. Anderson, Statesville, N. C.)

Mr. President and Gentlemen of the Medical Society of the State of North Carolina:

When I heard my name announced, at our last meeting in Oxford, as the essayist for this meeting, I felt that you had done me a high and unexpected honor; and yet so much of my existence having been spent "along the cool sequestered vales of life," I felt but poorly equipped to meet the requirements of this honor. My selection seems to me the strongest refutation of Darwinianism I have yet seen, for when was the doctrine of the survival of the "fittest" more severely ignored? The North Carolina Medical Society, I am proud to believe, includes in its membership as much talent qualitatively and quantitatively as any similar society our land can boast of, and when I look back at the galaxy of names which have adorned our annals in the past in the rôle I now assume, my heart sinks within me. But not to weary you, gentlemen, by a portrayal of fallen humanity as illustrated in myself, I ask you to look from this picture to that which I shall proceed to present. Not wishing to rehash to you text-book lore, and my own practice not supplying a case of sufficient interest, I have experienced no little difficulty in selecting from the broad domain of medical literature a suitable subject for your consideration and edification at this time. Happily, an intelligent gentleman of my town afforded me unconscious relief by asking me some time since, "Who were the first surgeons, and when was surgery first instituted"? Humiliated by the meagre information I could give him on the subject, I determined to take some incursions into that (to me) *terra incognita*. The investigation interested me, and I purpose on this occasion exposing to your view the reprisals secured on that predatory expedition. My subject, then, is the

EVOLUTION OF SURGERY.

Under this head it is my intention to also present, as well as I am able, some of the more important achievements of American surgery, and in doing so it is my duty to state that I am indebted to an

article in the *Journal of the American Medical Association*, by James E. Pilcher, M.D., Assistant Surgeon in the United States Army, and also to an article by Stephen Smith, M D., of Bellevue Hospital, for other data herein presented.

Ever since man's disobedience he has doubtless appreciated and felt the need of means for the relief of those casualties consequent upon the eating of the fruit of "that forbidden tree whose mortal taste brought death into the world and all our woe." Surgery of some kind is doubtless coeval with the advent of man. A certain skill in the staunching of blood—the extraction of arrows, the binding up of wounds, the supporting of broken limbs by splints and the like, together with an instinctive reliance on the healing power of the tissues has been common to man everywhere. From the misty records of the past it appears that the Egyptian priests were the earliest surgeons. Herodotus asserts that we owe to them the use of the moxa and the adaptation of artificial limbs. Among the ancient Hebrews there is but little evidence of surgical skill, and that little was confined to the priests. In Greece surgery is as ancient as the mythic period of its history. Chiron, the centaur, born in Thessaly, and skillful in the application of soothing herbs to wounds and bruises, is the legendary father of Greek surgery. But Æsculapius, the son of Apollo, said by some to have been the pupil of Chiron, though others call him his predecessor and superior, is the highest name among the annals of that early time for surgical skill. He is said to have been deified for his wonderful success, and temples were reared for his worship, which became the repositories of surgical knowledge, at Rhodes, Pergamus and several other places. Pythagoras, in the sixth century before Christ, established at Cretona a new school of medicine whose chief aim it was to advance the healing art. Democedes, among its earliest pupils, was eminent as a surgeon, having been taken by the Persians, he reduced the dislocated ankle of Darius, and in some fortuitous manner removed or cured the cancerous breast of his Queen, Atossa, covering the Egyptian physicians with chagrin and mortification as with a garment. But, not consuming time with lesser lights, we with reverence approach with quickening step that first milestone on the royal path of surgical conquest. Hippocrates, the father of medicine—the fires of knowledge which he kindled not only illuminated the darkness of his own age, but

cast their steady light forward through the murky centuries. He lived about 400 years before Christ, and is justly regarded the father of medicine, having raised it from a system of incantations and superstitious rites practiced by priests to the high dignity of a learned profession. He more than all his predecessors advanced surgical treatment: he reduced dislocations, adjusted fractures, used the trephine, applied the forceps in accouchment, made incisions into the kidney for the removal of calculi, performed amputations, perforated the cavity of the ribs in empyema, etc., etc. While no hospital reports remain and a magnanimous history is silent as to the mortality attending these exploits, yet, when we reflect upon how he was cramped by the religious superstitions of his time, which forbade the dissection of dead bodies, we marvel at his intrepidity, trembling the meanwhile lest the incautious use of his ready knife should puncture one of those "air-carriers" and let out a current very essential to the continued existence and well-being of his luckless patient. We offer him our unabridged homage for the dignity with which he invested medicine, and feel assured from his accurate descriptions of diseases, keen observation and varied accomplishments generally, he could easily have obtained license to practice medicine in North Carolina from our vigilant and able examining board, had he have renounced that enthusiastic doctrine which he taught, that all the veins had their origin in the liver, and that other damnable heresy to which he adhered, that it was the office of arteries to carry air. For a century after the death of Hippocrates we meet few names of note in surgery. Ptolomey Soter founded the Alexandrian school about 300 before Christ.

Herophilus and Erasistratus, the two great leaders of the medical school of that University, were eminent both as physicians and surgeons; with them commenced the practice of human dissection. The Alexandrian epoch stands out prominent by reason of the enthusiastic cultivation of human anatomy, but this era, while distinguished by boldness of operative procedures, was barren of a single addition to the stock of physiological or pathological ideas, or even to the traditional wisdom of the Hippocratic time.

Rome, so much engrossed by conquest and the perfection of arms, produced no surgeon of note in the first 700 years of its history. The first name of note we encounter is that of Celsus, who flourished about the beginning of the Christian era. He was the greatest

of the surgeons of ancient Rome; his observations on surgical subjects show considerable knowledge. On cataract, hernia, lithotomy, fractures and dislocations, he was far beyond his age. In the early period of Christianity surgery languished; the early Christians opposed dissection as strongly as the Pagans, and thus greatly retarded surgical advance.

Galen, born Anno Domini 131, exhibits among his writings on anatomy, physiology and pathology much insight into surgical subjects, though medicine was his favorite domain. Paulus Æginita, in the seventh century, was a surgeon of eminent ability as well as originality. He recommended topical in preference to general bleeding, as more effective in reducing local inflammations, resorted to copious venesection to promote the painful descent of calculi through the ureters; his sixth book is regarded by many as the best body of surgical knowledge prior to the revival of letters. In 1163 the Council of Tours interdicted its clergy, in whose hands it chiefly was, from all surgical practice, and for two centuries or more this science was mainly in the hands of illiterate barber-surgeons. The revival of surgical science dates from the appearance of Vesalius (died in 1564) as a teacher of anatomy in Italy, followed soon after by Fallopius and Eustachius. Surgery was then for the first time put upon a sound and scientific basis, the result of careful and accurate dissection, and Ambrose Paré, a French army surgeon, who had educated himself in anatomical science, was the first of its great lights. He was surgeon successively to four kings of France, and was Surgeon General of the French army down to 1569. To him we owe the revival and improvement of the practice of tying the arteries after operations and wounds, instead of cauterizing them with hot iron or boiling oil. The pupils of Paré added but little lustre to their master's name. At the close of the sixteenth century in Italy, Fabricius flourished at Padua, and his "Opera Chirurgica" is the first really valuable treatise on surgery of modern times. It passed through seventeen editions. He was the preceptor of Harvey, and doubtless instilled into him that intellectual fire and love of research which will preserve his name for the ages. Surgery in this century (the 16th) recovered much of the dexterity and renown that had distinguished it in the best periods of antiquity, while it underwent the development opened up to it by new forms of wounds inflicted by new

weapons of warfare. The seventeenth century was distinguished rather for the rapid progress of anatomy and physiology than for a high standard of surgical practice. Flap amputations, which had been practiced in the best period of Roman surgery by Leonidas and Heliodorus, were reintroduced by Londham, an Oxford surgeon, in 1679, and probably used by Wiseman, who has the distinction of being the first to practice primary major amputations. Richard Wiseman, the father of English surgery, is perhaps the most important figure in the surgical history of this century. He was the first to advocate primary operations before the onset of fever, in cases of gunshot wounds and other injuries of the limbs. He introduced also the treatment of aneurism by compression.

The eighteenth century marks the establishment of surgery on a broader basis than the skill of individual surgeons, and witnessed a still greater advance in the science. Of the names which dignified this era in Great Brittain on the broadening stage of surgical accomplishment, I can only mention a very few. Perhaps the first deserving mention is John Hunter. Commencing his career in the private dissecting room and school of his brother, Dr. William Hunter, in Great Windmill street, London, he by the force of his learning and indomitable spirit, rescued the practice of surgery from the hands of the unskillful barber-surgeons and by stimulating the study of anatomy, comparative anatomy, physiology and pathology elevated the science to the level of the older order of physicians—hence the significance of the eulogy of a living surgeon on John Hunter: "More than any other man he helped to make us gentlemen." In Edinburgh Alexander Monro—first of the name—was the first systematic teacher of medicine and surgery, and is regarded as the founder of the famous medical school of that city. Of other countries and of the meritorious names which adorned this period, the scope of this paper, "which, with only a middle flight, intends to soar," can make no mention. One name, however, of this era, I must not neglect to mention—that of Percival Pott, well-known for his investigation of that form of caries of the vertebra known by his name, besides other accomplishments. During the eighteenth century the branches of surgery which were materially advanced were the ligation of aneurismal arteries of large size, the treatment of hernia and fistula in ano, and the skillful management of difficult parturitions. The proper construc-

tion of instruments also received great attention. But I cannot tarry here longer. This brings us to the nineteenth century, our own glorious time, which has done more in the line of surgical development than all the rest combined, and following the "course of empire" I invite your attention westward, and hope by a brief recital of the mere outlines of the achievements in the noble science, in its new arena, to prove that it found here no uncongenial clime, and has not suffered by the transplanting. This brings us to the consideration of the men and the measures who have given form and character to American surgery.

The first problem presented to the sturdy settlers of this New World was the conquest of the primeval forest and the hewing of a State from the wilderness, and this doubtless engaged the attention of the hardy medical men of the period as well as the planter, and so we have but little to record prior to the opening of the nineteenth century, and yet the story of American surgery up to this time was not an entire blank, for during this uneventful period or stage of incubation the science was taking root preparatory to the full development reached in this century. The opening of the nineteenth century found maturing the young men who were to lay the foundations of American surgery. It is stated that the first systematic instruction in surgery in this country was given by Dr. William Shippen, Jr., in Philadelphia in 1762. He was a pupil of the Hunters of London. Encouraged by his success, he induced Dr. John Morgan to join with him, and together they laid the basis of the present University of Pennsylvania.

The next most prominent name encountered is that of Dr. Philip Syng Physick, of Philadelphia, who occupied the period between 1768 and 1837 by an honored useful life. Fruitful in mind and strikingly handsome in person, he so demeaned himself as to become the leader of the profession and to win the title of the "Father of American Surgery." Not a great writer, he was distinguished more for his eminently practical methods. At his death the mantle of leadership fell upon Valentine Mott, of New York, who was easily chief in American surgery till the date of his death in 1865. A thorough anatomist, a fearless operator and a brilliant teacher, he represented the best type of the American surgeon, though the times had brought upon the stage many no less representative and worthy. For we stand now upon the era which Gross and Pancoast

illumined. "Her light having come," henceforth American surgery occupies a lofty pedestal. Developing together, it is noteworty that the greater part of their lives was passed in close association and in friendship. Both surgeons of great skill, teachers of rare attractiveness, and authors of profound learning, they added greatly not only to the usefulness of American surgery, but increased markedly the sum total of surgical knowledge. The death of his associate left Gross not only the greatest of Philadelphia's surgeons, but the chief authority in the surgical profession in America. Honored by the world, he left many valuable works as monuments of his skill, erudition and untiring industry. But not to weary you by lofty panegyric, I pass rapidly on, and will only mention a few other honored names upon the scroll of surgical history in this country.

Dr. Lewis A. Sayre deserves mention here for the introduction to the profession of the plaster Paris jacket in the treatment of Pott's disease of the spine. For this discovery Agnew says of him: "Humanity owes him a debt of everlasting gratitude." An obscure country doctor in Kentucky so early as 1809 performed the first operation for the relief of ovarian tumor. Dr. Ephraim McDowell, of Danville, Kentucky, was the pioneer of this field which has become such an arena for surgical prowess. The cure of aneurism by digital compression is undoubtedly an American procedure. According to Agnew, Dr. Jonathan Knight, of New Haven, Connecticut, was the first to apply this method successfully. The practice of rendering limbs bloodless before operations is of American origin, and was first practiced in Philadelphia by Drs. Joseph Pancoast and S. D. Gross. Dr. Robert Battey, of Rome, Georgia, introduced the procedure called after him Battey's operation, for the extirpation of the ovaries to prematurely induce the menopause in cases in which menstruation was productive of evil. In this category Dr. Hunter Maguire, of Richmond, Virginia, is entitled to mention for calling the attention of the profession to the value of supra pubic puncture in cystitis and enlargement of the prostate. But perhaps modern surgery has made its greatest advance and achieved its most signal triumphs in connection with operations performed on the abdominal and other cavities of the body lined by a synovial or serous membrane. The older surgeons did not dare to invade these structures, but the surgeon of to-day

performs the most daring operations here with confidence, and is rewarded by a success which is almost marvellous. For these brilliant results he is indebted to the two handmaidens antisepsis and anæsthesia—one the gift of the Old World, the other the gift of the New World—both the outgrowth of our century and times. The discovery of anæsthesia belongs to America, and is the crowning glory of human achievement irrespective of calling. The honor belongs to Dr. Horace Wells, of Hartford, Connecticut. He discovered nitrous oxide in 1844, two years later Dr. William T. G. Morton, of Boston, discovered ether. Inestimable boon—"and there shall be no more pain" henceforth. In 1860 Sir Joseph Lister, from a study of the experimental researches of Pasteur into the causes of putrefaction, stated that the evils observed in open wounds were due to the admission into them of organisms which exist in the air, in water, on instruments, on sponges and on the hands of the surgeon. These organisms finding a suitable nidus for their growth and development in the discharges and surrounding tissues germinate in them, and being arbsorbed into the blood, give rise to pyæmia and septicæmia. Thus having accepted the germ theory of putrefaction, he applied himself to discover the best way of preventing these organisms from reaching the wound from the moment it was made until it was healed. After many disappointments he gradually perfected his method of performing operations and dressing wounds, which are so well known as to not require mention here, except to state that carbolic acid was the agent he selected to accomplish his purpose. Since 1875 surgeons have been trying to improve and simplify the method, and chemists have been trying to find a germicide free from the disadvantages of carbolic acid and yet effective. Various agents have been employed; at the present time bichloride of mercury is in the ascendancy. Long after the introduction of anæsthetics the chief desideratum of surgeons was rapidity in operating. Now the one thought and purpose of the surgeon is to secure *recovery without suppuration*, and to this end, instead of only exerting himself in the direction of keeping his instruments sharp, as formerly, he now uses every antiseptic precaution. Long before the operation the instruments are placed in a solution of carbolic acid or bichloride, in order that any possible septic matter on them or their handles may be destroyed, and great care is used in the preparation of the

parts to be operated on. The greatest pains is taken to thoroughly cleanse the wounded member, for the accumulated secretions of the skin and the dead epidermis, charged with poisonous animal matters, are a part of the wound and its immediate surroundings. Through this layer of filth the surgeon was wont to pass his knife into the living tissues beneath, conveying to the deepest parts of the wound matters of untold septic virulence. In this simple failure to secure ordinary cleanliness of the surface, more wounds were poisoned and induced to suppurate than from any other cause. In the closure of the wound the filthy margins were often brought in direct contact with the cut surfaces, and thus the propagation of the germs of fermentation or putrefaction were made sure by implantation in a fertile soil. After a careful washing, a douche of an antiseptic solution is applied, and then all the parts adjacent to the wound are covered with towels wrung out of bichloride solution. Formerly no care whatever was exerted in this direction to patient, instruments or operator. Formerly the surgeon was chiefly exercised in the direction of means to protect this clothing from becoming soiled. Now the surgeon and his assistants take infinite pains with their hands, nails, etc., not deeming it sufficient to merely wash them with soap and water, they are thoroughly rendered aseptic by a free use of the bichloride. The same care is extended to needles and ligatures, sponge, and, in fact, everything which shall come in contact with a wounded surface. Considering the intense irritating qualities of ligatures as formerly used, it is not surprising that surgeons applied as few as possible. The final dressing of the wound formerly was, the adhesive plaster and the bandage for support and retention. The plaster was never rendered aseptic, and did harm, if not positive injury, by its close relation. Now, the wound once closed is protected from external infection by the free dusting of iodoform and by the application of pads of disinfected materials or sublimate gauze, the whole being retained by disinfected bandages.

The former surgeons prepared the wound for suppuration—the latter surgeons dressed it for union without suppuration, and both uniformly realized their expectations. In view of its inestimable service modern surgery irreverently classes cleanliness ahead of Godliness.

The list of surgical procedures originated by American surgeons

is an unending one, and would require not volumes, but libraries, to fully set them forth. It was my purpose to enumerate the more advanced, but I found that to repeat the mere *names* of the methods devised would seriously tax your patience. Suffice it to say that the well equipped surgeon of to-day knows no other limitations than the boundaries of morbid processes, and approaches as near his Creator as the creature dare go.

Entertaining no hope at the outset of this *un*-adventurous article to answer the exultant inquiry of Job, "Canst *thou* draw out leviathan?" I have simply endeavored, gentlemen, to discharge the trust you placed in my hands, and trust you will accept this as in some way meeting the demands you put upon me.

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